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THE
DENTAL DIGEST

A Monthly Summary of Dental Science Devoted
to the Progress of Dentistry.

THE OFFICIAL ORGAN OF THE

Dental Protective Association

OF THE

UNITED STATES

FREEDOM
AND PROGRESS COME
FROM UNION OF
ACTION.

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Original Contributions.

THE CRIGLER REMOVABLE DENTURE.

Described by Dr. B. J. Cigrand at the Request of the Author,
Dr. J. W. Crigler, Bloomington, Ill.

The difficulty experienced by the dental profession in attaining satisfactory results in lower buccal-dentures and the inconvenience they have given the patients, afford a most interesting title for an extensive discourse. The primary trouble seems to come from the instability of the denture; the process of mastication is very much interfered with, since the denture does not remain firm on the alveolar ridge, and in consequence greatly obstructs proper occlusion while masticating.

fig. 2.

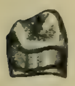


fig. 1

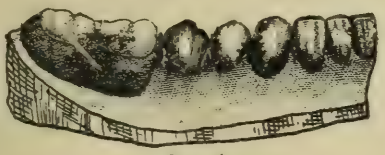
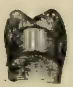


fig. a.



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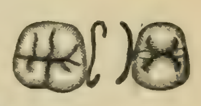

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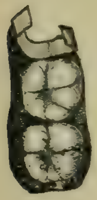


fig. 4.

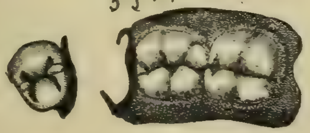
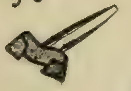
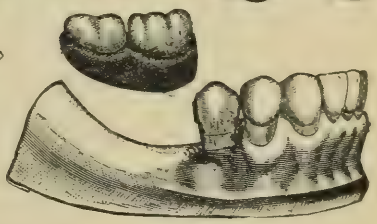


fig. b.





The profession has long wished for some appliance which would correct the uncertainties of these "lower buccal-dentures." Dr. Crigler, it appears, has devised a substitute which in many respects alleviates these undesirable annoyances. Few cases present a better field for contemplation or invention than those cases where on one side of the lower jaw the molars and possibly the first bicuspid are missing; and these cases are not infrequent in a large practice. In fact, they are so numerous that practitioners have attempted innumerable methods without attaining the hoped-for success. Invariably we find, in the cases cited, that in order to replace these missing organs it becomes necessary to produce what is known as a "horseshoe base-denture," an attachment whose base completely encircles and encroaches upon the lingual surface of the lower teeth. Other operators have found it advisable to somewhat abridge the extent of the "horseshoe" by supplying gold-clasps to the base and attaching these to the natural teeth, thus affording some stationality to the denture while articulating or masticating. But there has not as yet been a substitute brought forth which in every detail answers all requirements relative to the cardinal principles—cleanliness, adaption, articulation and mastication. Not even in the Crigler method are these necessary requisites supplied—still by his method there is a decided step in the right direction, and if one will closely study the underlying principles of his process this truth will be revealed.

In the first place, by his manner of substitution the entire lingual arch of the teeth is not covered or annoyed by foreign substance, healthy surroundings are furnished for the dental organs, and further, there is no encroachment on the lingual cavity, thus allowing the tongue all possible freedom.

The process of construction may at first sight appear difficult and even intricate, but on better acquaintance one is impressed with the simplicity of the apparatus. In fact one can hardly conceive of a process which will embody all the desired results and be free from technic.

Dr. Crigler advances two methods for ascertaining the same sequences, and it shall be my pleasant duty to illustrate and explain the modus operandi in the construction of a denture according to his recommendation. In the case before us, Fig. 1, the right lower molars are missing, the other teeth are in good condition and are in perfect anatomical position. The first step is to prepare in the usual way the second bicuspid for the reception of a barrel or telescope gold crown, after which solder upon its disto-lingual surface a piece of clasp metal (platinized gold) gauge 24, shaped much like Hogarth's line of beauty; adapt it to the gold crown, as in Fig. 2, and attach same by solder, that is, flowing full the lingual contact, but permitting the buccal end to remain free as in illustration. The next step is to produce a piece of clasp-gold which will perfectly complement the crown attachment, Fig. 3, thus anchoring the clasp-complement. Now remove the complement and solder to it a bar of platinum or stiff gold, allowing the latter to extend over, yet not to rest upon, the alveolar ridge; then anchor the complement. Wax up that portion of the alveolus which you intend shall carry the vulcanite, then accurately fit and occlude the artificial teeth and proceed to invest the case and treat it as an ordinary vulcanite denture, Fig.4; the subsequent steps relative to polishing or adjusting are readily understood.

The second method is very similar to the foregoing, differing only in the crown-bar and its complement. By this process the gold crown has soldered upon its distal surface a piece of gold or clasp-metal, gauge 24, and shaped like an equilateral with the cone missing, Fig. a; this is soldered to the gold crown in such a manner as to leave unsoldered and free the lingual and buccal ends; its complement is produced as before described, Fig. b, that is to thoroughly embrace the crown-bar, as in Fig. c.

This device is indeed ingenious, and its perfect stability as well as its durability recommend it to such as are hopeful of correcting in a measure the unsatisfactory and cumbersome dentures employed in present-day practice.

MY EXPERIENCE WITH CATAPHORESIS.

By J. N. Crouse, D.D.S., Chicago.

Threats of patent litigation forced me to give the subject of cataphoresis more than a casual investigation, but I did not give it any practical trial until after the valuable paper read at the American Dental Association by Dr. W. H. Gillett. The claims therein made by such an authority compelled me to lessen my skepticism as to the efficiency of a current of electricity in bringing about that much-to-be desired condition which would enable us to prepare sensitive teeth for filling without that excruciating pain which we were constantly inflicting upon our patients. So I began to experiment and found the use of cataphoresis so satisfactory that nothing could now induce me to be without it in my practice, and nothing but my own personal experience could have convinced me of what can be accomplished.

I am being overwhelmed with inquiries something like this: "Can you really take a very sensitive tooth and with the aid of cataphoresis render the tooth insensible to the bur?" And such questions come from the most intelligent men in the profession. For the benefit of them and others I will state emphatically that I can render any tooth with healthy circulation free from pain in the preparation of a sensitive cavity, or in other words, can reduce extremely sensitive dentin to insensibility. To do this the following conditions must be rigidly observed: You must have absolute dryness, as a flow of saliva will conduct the current away from the tooth upon which you are working. There must be no metal fillings exposed to the current. The positive electrode must be kept firmly in the cavity or cavities, and must not be allowed to come directly against the enamel of any of the teeth. Failure will result if any of these precautions are neglected.

How to conduct the current to the tooth. The first step is to secure absolute dryness, which necessitates the careful adjusting of the rubber-dam. To obviate the necessity of using a clamp, which is always more or less unpleasant and in the way, I find that the dam can be held securely in place by oxyphosphate of zinc. The teeth should be thoroughly cleansed before the dam is put on, and after being adjusted it should be held in place by a properly curved instrument, the moisture wiped from the necks of the teeth and a small quantity of oxyphosphate applied to them. It soon becomes hard and is not affected at all by moisture and the dam cannot be worked loose by the patient. It can also be held in place in the same way when the cavity is under the margin of the gum. When the dam is properly adjusted and dryness secured, the cavity should be opened and as much of the soft decay removed as is possible without causing pain. Next, any metal fillings which may come in contact with the electrode must be insulated. To do this I have had great success in the use of a thin solution of aristol dissolved in chloroform. The chloroform soon evaporates and the aristol adheres with great tenacity to the clean surface of the teeth or fillings. Wax or gutta-percha will answer the same purpose, but something must be used which will prevent any contact of the metal filling with the electrode or cocain.

Instead of using in the cavity the platinum point, which must be held steadily with the hand or secured by some appliance, thus taking time and effort, I use a small piece of fine german-silver wire, 32 gauge. One end of this wire is attached to the positive electrode and the other is wound around a pellet of cotton large enough to fit tightly in the cavity. It will remain there firmly and give the operator the freedom of his hands, enabling him to work in some other part of the mouth, which I frequently do while anesthetizing a tooth, or to work for another patient until the dentin is obtunded. I use the german-silver wire which has a double cover of cotton or silk, of course removing the covering from the end which is attached to the electrode. The question of discoloration resulting from the use of german-silver wire has been raised, but I have never yet seen any deleterious effects from its use. Dr. Ely, of this city, who has also used it in the same way, does not think that it will discolor the tooth. If you wish to use platinum wire, or any wire which is not covered, it may be coated with the aristol and chloroform above mentioned and thus be insulated. After the pellet of cotton is packed into the cavity it should be saturated with a solution of cocain. Then with the negative electrode moistened and held firmly by the patient we are ready to turn on the current.

The amount of current that can be used to advantage in each particular case depends entirely upon the size of the cavity, the amount of dentin exposed and to be operated upon and the sensitiveness of the tooth. If very sensitive the patient will bear less voltage than where the dentin is not so sensitive, and where much cutting of the solid tooth substance is needed more voltage will be required.

The irregularity of the current and consequent shocks to the patient are difficulties which have tended to discourage the use of cataphoresis. Discovery of the causes and removal of the same is sure to do away with these prejudices. Many times the cause of irregularity in the current while being conducted to the tooth is due to imperfection in the instrument. As described by Dr. Custer, a fountain spittoon attached to chair will give a shock, in case it (and we would also include from experience any of the exposed metal about the chair) be touched by the patient; consequently, felt or rubber washers should be placed between the metals where they are attached to the chair. If the bare metal of positive electrode be allowed to touch the enamel of the teeth the current can be largely increased without unpleasant sensation to the patient, since the enamel is a non-conductor, and then when the electrode slips away or is moved from the enamel the full current will be turned into the tooth, resulting in shock. Should the patient let go of and then take hold of the negative electrode while the current is on a shock will be given. By removing the current too rapidly from the tooth a shock is produced.

I am using the street current and, with a voltage rheostat as well as a current controller, do not see how injury can result from the use of this kind of current. By combining two sets of wires I have turned 220 volts through the instrument and have then tried it on myself, without any unpleasant results or shock. It has seemed to me sometimes that the danger apprehended and the accidents reported as resulting from the use of street currents come for the most part from those having batteries to sell. I know of various ones using the street current, but have not heard them complain of having much difficulty with it. It is surely much less trouble than the battery, where the street current is reliable, although a battery is satisfactory where the other is not available.

The extra time required is sometimes urged as an objection. Time is consumed in producing the anesthesia, but this can be lessened considerably by allowing the patient to operate the controller, and you can then operate somewhere else in the mouth or can have other patients for short sittings on another chair. I prefer these methods so as to give the cocain plenty of time to penetrate the tumuli of the dentin, producing complete anesthesia and making good the promise which has probably been given—that I will prepare the cavity without any pain. Then when there is no sensation it takes but a very short time with a sharp bur to prepare a difficult cavity, and thus with the majority of patients time is saved, as it would take hours to prepare the cavity as thoroughly as it can be done when the sensibility is deadened. Furthermore, there are two other very important points which must not be overlooked. The first is the fatigue and nervous strain upon the patient when very sensitive teeth are operated upon, which is obviated by removing the sensitiveness; and the second is the relief from the nervous strain upon the operator. I think that since this is the case it is our duty to afford our patients and ourselves this relief.

Finally, there is no service which will command such generous appreciation and be remunerated so cheerfully and liberally as the abolishing of the torture which most of our patients undergo while having sensitive teeth prepared for filling.

ACONITE FOR SWOLLEN FACES.

By T. A. Davis, D.D.S., Warsaw, Ill.

In the spring of 1887 my little daughter had an inflammation of the submaxillary glands which was prevalent at that time, and as she was suffering intensely I called in a physician to attend her. He prescribed a poultice made of hops, elm, musk, tar and goodness only knows what else, and as this gave no relief he lanced on both sides, disfiguring her face for life.

Before she recovered I was attacked with the same trouble and the doctor prescribed the "poultice," not knowing what else to do. It was applied in the morning and I wore it until evening, but then, being in agony, I sent my son to the office for my tr. of aconite bottle. When it came I unwrapped my face, washed it in cold water and then bathed it with the aconite, using about half an ounce. This afforded some relief, so I rested an hour and then bathed my face again with the tincture, using nearly an ounce; then went to bed and to sleep and had no more pain whatever, although the swelling did not entirely disappear for several weeks. When I told the doctor the next day what I had done he asked if I had "no fear of death," but he afterwards admitted that he had learned a lesson from the experiment.

In my practice I use the root tincture with good results on faces swollen from abscess, removing the stain with a wet napkin. Last February I was called by a physician to see his little daughter, a child of 10 years, who was suffering with abscess of the first left inferior molar. The whole family had been up two days and nights with her and her head was wrapped in a shawl, as the air hurt her face. I prescribed the topical application of tr. of aconite and plenty of it, and the removal of all wraps from her head. In two hours the child was easy and went to sleep, and her father said he had learned something. Thinking that others might profit by these experiences is my excuse for writing this.

METHOD OF TREATING AND FILLING PULPLESS TEETH

By L. E. Disney, D.D.S., Peabody, Kan.

Having read scores of articles on the different methods of treating and filling pulpless teeth, without ever seeing or hearing a description of my method, I felt inclined to write it up for the Digest, thinking that it might be productive of some good. This is my only apology for taking up the pen on this subject.

Some time in the early sixties I date my first recollection of the use of carbolic acid. It was introduced to the profession as a medicine possessing great disinfectant and antiseptic properties. Its use became very extensive and won for it a permanent place in the pharmacy of many dental offices.

A common practice in those days was to saturate a small pellet of cotton with the acid and pack it into the roots of pulpless teeth, almost irrespective of the cause of that condition. Recent writers have mercilessly condemned that practice, and yet it now seems to me that we had no more trouble then with teeth so treated and filled than we have now with all our boasted scientific, literary and artistic improvements.

Scholarly research and scientific investigation have discovered and made prominent numerous new remedies and inaugurated many new methods, some good, others bad. Old remedies and methods have been abandoned for the new ones. Experimentation still goes on, bringing something new daily to the front for time to adopt or reject. That is right. "Prove all things; hold fast that which is good," is a doctrine never more intelligently and energetically practiced than to-day, and we are proud to say that the dental profession is well up in the lead. The idea of looking to our leaders for every innovation has been too common in our profession. Every wide-awake dentist should be his own leader so far as his ability and circumstances make it possible. One member has as good a right to invent new methods and formulate new theories as any other man, but he must be careful to know that his invention can be practically useful and his theory logically proven if he would be successful.

These reflections bring me to the main thought of this paper, my method of treating and filling pulpless teeth. The pulp is devitalized in the usual way. The roots are cleansed as thoroughly as possible, then with cotton dipped into a mixture of alcohol and aqua ammonia, in which, owing to the quantity of liquids, two or three grains of salicylic acid have been dissolved, the roots and crown cavity are thoroughly drenched. In a few minutes this is replaced by cotton dipped in campho-phenique and covered with a pellet of dry cotton. The patient is then dismissed, usually for two days. At the next sitting a fresh dressing of the same kind is inserted to remain until the root-filling is prepared. I use oxyphosphate and prepare it as follows: A drop of cinnamon oil is placed on the slab with one or two drops of the cement-liquid and the two are thoroughly mixed. Then the powder is added and worked in till the combination is as thick as good rich cream. With instruments, oiled with glycerin to prevent the cement from sticking to them, the operation of filling the roots is begun and the cement is carefully pushed up until the patient can feel it at the root-apex. Then with larger instruments I continue to press in the cement, and when the pressure by instruments too large to enter the roots produces a slight sensation at the apex, I consider them well filled and proceed with a ball burnisher, or something similar, to spread the cement out over the floor and up against the walls of the cavity, always taking care to leave it in good shape for the reception of our filling, whatever it may be.

Teeth in which the pulps have been dead for months are treated in substantially the same way, but longer, as the treatment must be continued until the cavities are perfectly sweet and clean.

Occasionally, either in the case of devitalization or where the pulp has been long dead, there may be a little soreness at the apex of the root, owing to careless crowding of the cement a little too far, but it usually disappears in a day or two, especially in the former condition.

The method above described, albeit imperfectly, I have practiced for several years and can testify to its merits. My success has been much greater than with chloro-percha and gutta-percha points, or with any other material I ever tried. To be sure I have had some failures, but who with whatever methods does not have them, and this plan of procedure gives fewer than any other with which I am familiar.

SURE CURE FOR FELONS.

BY F. J. FESLER, D.D.S., LOWELL, MASS.

I wish to give the readers of the DIGEST a sure cure for felons—that is, taken in the incipient stage. A felon, as you know, is many times caused by burns, bruises and the like, and very often by the long continued and constant pressure of small instruments, making dentists very prone to this troublesome affliction. The first sign is a little sore point under the skin, feeling as if a needle-point or piece of glass had become imbedded there, and tender to pressure. Then go to the druggist and get a fresh piece of "Fly Blister," one-quarter inch square, place it over the tender spot and hold firmly in place with court-plaster. Put it on before retiring at night and in the morning a blister filled with serum will be present. Remove the fly blister, prick the blister, letting the contents out, then protect the sore spot for a few days and you will escape a felon. I have found this to always be a sure cure, if used in time, and no harm is done if a sore spot is wrongly diagnosed as a felon.

Cancer of the Tongue.—Dr. Frank Martin read a paper on this subject, in which he described the character of the growth usually present, the epitheliomatous; the age when it was most prevalent, 45 to 68; the length of time it took the growth to develop, six months to three years; and the various operations for its removal. He said that the symptoms at first were very undefined, with very little pain. It usually began on the side of the tongue and in its anterior half, and the duration of life without operation had been recorded as from one year to eighteen months. He spoke of the various operations, such as that done with tracheotomy, with excision of the jaw, and with operation through the mouth. He found that the operation by excision of the jawbone gave the most complete results and in his experience the wound healed kindly.—*Med. Record.*

Eucain in Tooth Extraction.—The London *Therapist*, September, states that the following procedure has in dentistry been found acceptable: 1. Dissolve 1 part of eucain in 10 parts of water, and boil the solution; before injection the solution must be quite clear. It is best preserved in a small-stoppered glass bottle. 2. Before extraction disinfect the mucous membrane thoroughly by washing with a plug of cotton-wool soaked in hydrogen peroxid or a 2 per cent carbolic acid solution. 3. Make the injection by inserting the needle well into the gums, about half way up the alveolus, and only inject so much of the solution that the mucous membrane in the neighborhood becomes white and slightly raised. Both buccal and lingual injections must be made. It is the most important that the solution should not be injected at the junction between the gums and the mucous membrane of the cheek. 4. The extraction is made about one minute after, when the patient has himself felt the anesthesia, and not directly after injection. 5. After hemorrhage has ceased, I remove the eucain solution by puncturing with the needle and pressing upon the part with my finger. 6. Slight swellings nearly always occur after every extraction with resection. If the operator has used much eucain, and especially if it has been injected near the juncture of the gums with the mucous membrane of the cheek, so that edema is anticipated, the patient should be told that a swelling will probably appear, but be perfectly painless and subside of itself within a day or two. I consider this swelling quite without danger, as it is completely painless and so quickly subsides, and because I have never observed any other secondary symptoms.

Digests.

DEATH FOLLOWING THE ADMINISTRATION OF NITROUS OXID. By H. A. Hare, M.D., Philadelphia. The following case illustrates the influence which nitrous oxid gas may have when administered to persons suffering from atheromatous blood-vessels. A man between 50 and 60 years of age visited the office of a well-known dentist who makes a specialty of extracting teeth under the influence of nitrous oxid gas, in order that he might have removed one or two molar teeth which were giving him trouble. He had often taken gas in the same dentist's office before, and always without any ill effects whatever. On this occasion he took the ordinary quantity, his teeth were extracted, and he returned to consciousness with the usual rapidity. He left the chair and walked to a washstand and began to rinse out his mouth with water. While doing this he stated that his right hand felt numb, then complained of the extension of this numbness up his arm, and rapidly to his leg and side. He was helped to a sofa, where in a few minutes he became partially unconscious. When I saw him the attack had already been in existence about twenty minutes. He was breathing stertorously, seemed to understand questions put to him, but was unable to answer them clearly, and in the course of a very few minutes passed into absolute insensibility, which, nothwithstanding the use of venesection and other measures, deepened into a coma, in which he died about twelve hours after taking the anesthetic.

This case is reported, not as a death due to the direct influence of nitrous oxid gas, but as an instance of the fact that the marked rise of arterial pressure which is produced by the administration of this drug during the period of anesthesia may cause the rupture of a blood-vessel in persons who have a tendency to apoplexy.—*Therapeutic Gazette, December, 1896.*

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DEPARTMENT STORE DENTISTS. On November 12 the superintendent and two employes in the dental department of the Siegel-Cooper Company were arrested upon the complaint of the Dental Society of the State of New York, the charge against each being that he had practiced dentistry in New York county without registering therein according to law. All of the accused waived examination and were held for trial at special sessions, wherein several adjournments were granted to them. Finally, on December 3, all of these cases were set down peremptorily for trial. Counsel for two of the accused asked a further adjournment, upon the ground that the attorneys previously employed by them had abandoned their cases, and that he had just been retained and wished to call witnesses to prove his clients' innocence. The court said that under the rules the adjournment could not be granted against the opposition of the prosecution. Counsel for the Dental Society then said that, although the only defense to the charge of non-registration would be the proof of registration, which, if it existed, could be procured within ten minutes from the county clerk's office, he would, nevertheless, consent to an adjournment until the following day, upon the absolute condition that the cases should be tried then. Upon this understanding, Mr. Mingey, the counsel, accepted the adjournment, and forthwith procured a stay of proceedings and an order to show cause why the cases should not be transferred to general sessions. Upon the following day the other defendant was then tried and convicted—one judge, however, dissenting from his colleagues' opinion that the examination of a patient's mouth and subsequent advice as to the condition of the mouth and what was needed to be done constituted "practice of dentistry," the dissenting judge being of the opinion that some mechanical or operative act should be performed.—*Medical Record*, *December*, *1896*.

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UTILITY OF SENSATION OF PAIN. Purpose Served by Tortured Nerves is to Call Attention to Physical Troubles. The statement of Dr. S. Weir Mitchell, in his address on "The Birth and Death of Pain," at the recent Boston celebration of the semi-centennial of anesthesia, that the purpose of pain is "a riddle to which earth can give no answer," is called in question by the editor of the *Hospital* in a leading article (December 5). To the editor the use of pain, far from being a riddle, is so clear that he who runs may read. Pain is to the ordinary man a warning of danger. Says the editorial to which we refer:

"Here is a man with a painful, broken arm. Does the pain serve any special purpose, any purpose which might not as well have been served without it? Most assuredly it does. But for the pain the average man—not, perhaps, the scientific man, but the average man—would not pay heed to his injury; would, not, in fact, devote the necessary time and trouble to its perfect repair. We have to consider what the average man is for the purposes of this discussion. He is not the average modern American, or modern European, tinctured with all the culture, all the science, all the high morality of the modern world. He is the typical person of no education, who has made up the generations of men from the earliest times when mankind emerged from the practically brute condition into dawning moral consciousness. That is the average man to be considered when we ask what may be the purpose of pain. Has pain had a purpose of any kind for all those countless generations of the uncultured past who have constituted the solid mass of mankind? Most assuredly it has had a purpose—many purposes. It has compelled attention to injured structures; it has enforced rest and sleep by the distress of weariness; the taking of food by the tortures of hunger; and, in short, has been the general indicator and corrector for man and beast in the exercise of physical and physiological energy of every kind. Not only so, but the moralist and the religious teacher will unite in insisting that the educational value of pains in the regions of morals and religions has been and continues to be incalculable. So, far from agreeing with Dr. Weir Mitchell that pain has no purpose in the world, we affirm that one of the most obvious of all the facts connected with pain is its definite and incalculable value, as an indicator, corrector, educational force, alike in physical, mental and moral spheres."

This being so, an objector may say, why interfere with pain at all? This stand was actually taken by many who held, at the time of the introduction of anesthetics, that to use them was to fly in the face of the Almighty. But the *Hospital* points out that such a course would be quite illogical. It says:

"That which is essential for one period of human development may not be essential for another. The sharp physical stimuli, the clubs and spears of the early savages, are not needed by the later race of men. In earlier times hunger, thirst, fear of wounds from enemies, the most elementary of all sensations, were needed to compel even the highest races of men to do the best that was in them. In our times there are millions who work in obedience to motives altogether different from the driving forces of hunger, cold and physical fear. Ambition compels exertion, duty, mere love of work. And so the element of painfulness being less and less heeded, plays a less and less conspicuous part as a driving and correcting force in the world. Will pain, or the possibility of pain, ever be eliminated from the experience of man or 'killed,' as Dr. Weir Mitchell might prefer to put it? Most probably not, so long as man is endowed with his present nervous system. But it is possible, nay, it is quite easy, to imagine a time when mankind in general shall have reached such a stage of mental capacity and culture, such a wide and masterful victory over nature, such a degree of physical vigor and material prosperity that pain shall be a very exceptional fact in his experience. This is the goal at which a philosophical medical science must at any rate aim, with all the energy of which it is capable."—*Literary Digest.*

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THE DENSITY OF THE TEETH AND ITS RELATION TO CARIES. By C. N. Johnson, L.D.S., D.D.S., Chicago. Read before the Chicago Odontological Society, October 20, 1896. In the May, 1895, issue of the *Dental Cosmos*, Dr. G. V. Black began the publication of a series of articles, entitled "An Investigation of the Physical Characters of the Human Teeth in Relation to their Diseases, and to Practical Dental Operations, Together with the Physical Characters of Filling Materials."

This was the first really systematic and scientific effort made to determine the varying density in the teeth of different individuals or of different teeth in the same individual. Previous to this it seemed to be the generally accepted opinion of the profession that this variation was pronounced, and in many instances very great. The expressions, "hard teeth," "soft teeth," "dense teeth," "chalky teeth," etc., were frequently found in the literature of the profession, and this was supposed to refer to teeth having a greater or lesser percentage of lime salts. The density of the teeth was also believed to have a marked influence upon the liability of teeth to decay, and it was largely taken into account by many operators in the selection of a filling material.

Dr. Black finally became dissatisfied with our lack of exact knowledge of the subject, and instituted a series of painstaking and elaborate experiments to determine the true density and relative strength of the different teeth. In following out this most exhaustive work he spared nothing in the way of time, labor or expense to arrive at definite and conclusive results. It gives me pleasure at this time to testify to his unceasing attention to the minutiæ in every phase of the word. It was my good fortune to visit him in his laboratory during the progress of the experiments, and to witness the process to which he subjected every specimen in his records. That visit impressed me with the conviction that I had never till then witnessed true scientific investigation, and made me morally certain that so far as human agency could insure infallible results the issue of Dr. Black's findings must be final.

This series of experiments proved conclusively that the generally accepted idea of the profession in this matter was at variance with the facts. Dr. Black found that at most there is very little difference in the percentage of lime salts in the teeth of different individuals. In fact, to use his own words, "There is a difference between the individual teeth of the same person that is much greater than the difference in averages of the teeth of different persons."

It has seemed to be very difficult for the profession to follow Dr. Black's investigations, or to see the significance of what he has demonstrated. Probably only a very small percentage of the profession are in the habit of reading papers of this nature, and even among those who do, it is asking much to expect them to at once renounce their preconceived notions and fall in with a wholly different point of view. More especially is this true if their original ideas have been formed from an extended clinical observation. Men are inclined to cling tenaciously to what they believe their experience has taught them, even when confronted with facts which prove their ideas to be faulty. In this, as in many other things, clinical observation is not altogether reliable; and yet the profession goes on basing its opinion largely on what it thinks it sees.

In any event we still find in our periodicals frequent references to "hard teeth," "frail teeth," "soft teeth," etc., relating to the supposed varying degrees of density, and we also see certain kinds of filling material advocated for certain kinds of teeth. In the light of Dr. Black's investigations, such references are misleading, and such reasoning erroneous. There is very little difference in the structure of human teeth, so far at least as the percentage of lime salts is concerned, and there are no teeth of so poor a structural quality that they are unsuited for the reception of any of our hardest filling materials. Other things may materially influence our selection of a filling material, but the structure of the teeth has little to do with the question.

In this connection it may be well to consider a point that has seemed to lead to some confusion of understanding. The question arises as to what is really meant by the average practitioner when he says "hard teeth," or "soft teeth." Dr. Black once asked me what kind of an answer I should expect to get from members of the profession generally if asked what meaning they intended to convey by these terms. I said, "I should expect them to answer that by 'hard teeth,' they meant teeth that offered great resistance to cutting instruments, teeth that were difficult to break down with a chisel or pierce with a bur or drill." Said he, "You are mistaken. I have asked many of them and they almost invariably answer that by 'hard teeth' they mean teeth that do not decay readily, and by 'soft teeth' they mean teeth that are easily attacked by caries and break down rapidly under its influence."

It would seem to the observant operator that at best this form of argument was reasoning from effect to cause instead of from cause to effect, and if this be the real opinion of the profession at large it is proof positive that they have not carefully considered the question. It has certainly been demonstrated beyond the shadow of a doubt that the density of a tooth has little to do with its liability to decay. That all teeth are not alike in structure, so far at least as certain phases of their physical character is concerned, must be admitted, but that this difference relates to any great variation in the percentage of lime salts or that it has anything to do with the carious process has been sufficiently disproved.

One fact has seemed to mislead many operators and cause them to look with doubt upon Dr. Black's conclusions. His first series of articles went to prove that the teeth were quite uniform in their density, that there was little variation in the percentage of lime salts, and that the expressions "soft teeth," etc., were misleading. Men read these statements and then proceeded to note as best they could in the mouth the physical character of the teeth to the end that they might verify or disprove what Dr. Black had written. The thing that struck many of them immediately was the appreciable difference in teeth in their power to resist cutting instruments.

That this difference does exist seems scarcely to be doubted; it has been noted by too many operators who are not careless in their observations. This fact confused many of them and led them to assume that there was some discrepancy between Dr. Black's findings and the actual facts.

When this question was brought to his notice Dr. Black hastened to state, in a paper read before the New York Odontological Society, and published in the April, 1896, issue of the *Dental Cosmos*, that his investigations had not included this phase of the subject. He says: "Since the publication of my papers, I have been so frequently asked about differences in the hardness of the teeth to cutting instruments that I wish to say emphatically that there was no intention of saying anything whatever on that point in what I have written. Whenever hardness or softness of the teeth is mentioned, it has been with reference to the prevailing expression of hardness or softness as expressing the idea of more or less perfect calcification, or with reference to the ability of the dentin to withstand heavy pressure without crushing. It has not had reference to the behavior of the teeth before cutting instruments. I did try to investigate that point and tried a number of plans. None of them gave results that were satisfactory, or that I thought valuable. I will say here, however, that experimentally out of the mouth I was unable to find any marked difference between teeth classed as soft and teeth classed as hard, and the impression upon my mind is that much of the difference in the hardness of the teeth as found in operating in the mouth is a matter of position, direction of cutting, and opportunity. Still, however, I am finding in practice that which appears to be very considerable differences in the hardness of teeth to cutting instruments. I am persuaded that in many cases men have mistaken for normal dentin, dentin softened by partial solution of the lime salts."

In discussing this question subsequently with Dr. Black your essayist asked him upon what grounds he based his opinion that the apparent differences in resistance to cutting instruments was due to lack of opportunity. He replied that in his experience he had found that the angle at which the instrument was held influenced largely the ease or difficulty with which the tooth tissue responded to it. For instance, in placing a chisel against a wall of enamel to break it down, it sometimes occurred that several hard blows of the mallet would be struck without apparently affecting the tooth tissue in the least, but that the moment the angle of the chisel was slightly changed the enamel gave way under it with little pressure.

This fact has, of course, been frequently noted by all observant operators, and yet it does not seem to account for the many variations we find in resistance to cutting instruments. It relates more particularly to the line of cleavage of enamel, and has principally to do with the direction of the enamel rods. But in the actual drilling into sound tooth tissue in the extension of cavities or opening out of fissures, there is a marked and a very emphatic variation in the degree of resistibility manifested by the different teeth. Given two teeth standing in precisely the same angle in the mouth, with equal facilities for approach, and the operator armed with drilling instruments of uniform keenness, one will be found to present a flint-like hardness that blunts the drills or burs discouragingly with little penetration into the tooth tissue, while the other will admit the drill with slight exertion and grind up almost like a piece of chalk. The recognition of this clearly demonstrated fact in Dr. Black's original series of articles, and the explanation that it had no bearing on the question at issue, would have done much to disarm possible skepticism on the part of many observant operators.

But the main point of emphasis in the present paper relates to the supposed connection between the density of the teeth and the process of caries. That there is little or no relation between these two conditions seems demonstrated conclusively, and the sooner the profession awakens to a realization of this fact the better it will be for our patients. Thousands of useful teeth have in the past been consigned to the forceps on account of this fallacy, and thousands more will be unless the fallacy be recognized. Until the rank and file of the profession understand that decay of the teeth is a disease influenced by external conditions rather than by the inherent structure of the teeth they are not able to intelligently combat the trouble.

Let us assume a case for the purpose of illustrating the different lines of procedure in accordance with the different theories. One operator has presented to him a mouth in which decay of the teeth seems to be progressing rapidly. He believes from preconceived notions that the structure of the teeth is poor and that it is well nigh useless to try to save them. He patches them up in a half-hearted sort of way and tells the patient that the teeth are soft and not likely to last long at best, and the patient feeling that the fight is all one way fails to take proper care of them. The result is that new cavities are formed and recurrences of decay take place around the fillings. The operator attributes the failure of his work to the defective structure of the teeth, and the patient yields up the issue and has the teeth extracted. This is the history of many a case.

Another operator, recognizing the true significance of caries, takes his patient vigorously in hand and proceeds on the theory that if the conditions surrounding the teeth can be controlled, the teeth themselves are of good enough structure to be saved. He impresses the patient with the importance of painstaking care of the teeth to the end that deleterious agents affecting them may be eradicated from the mouth. He lays great stress on cleanliness. Then he proceeds to his operations with great thoroughness, believing that he has in the teeth a sufficient structural foundation for permanent work, provided he can wall out the active agent of decay. He counsels his patient to apply frequently for examination of the teeth so that he may detect evidence of the disease in its early stages. In the very worst cases he keeps up a vigorous fight with the hope that the conditions of the mouth may change and modify the tendency to decay. And in many cases this very thing happens. We have all observed cases where the teeth have been decaying in a most discouraging manner for years despite our best efforts to combat the disease, when suddenly the mouth seems to become immune from caries and we are successful in ultimately saving the teeth. This immunity relates not to any structural change in the tooth tissue, but to a change in the conditions surrounding the teeth which renders the propagation or development of the microorganism of caries less favorable. We are never able to predict when such a change may occur, but the fact that it does occur should encourage us to make a supreme effort to save a patient's teeth even in the face of discouraging symptoms.

Just what is the nature of this change in condition we are unable with our present knowledge to indicate. If we could produce such a change by treatment, either local or general, we could go far toward preventing dental caries. And it remains for the future investigator to solve this problem. Dr. Black has indicated the lines on which a solution of the difficulty must be worked out, and in March, 1894, before his recent experiments in the physical characters of the teeth had been made, I had written in the *Dental Review*, page 201, as follows: "We believe then that the problem of preventing dental caries must be worked out along other lines (than mere local treatment), and we have a suggestion to make as to what these lines shall be. It would seem patent, in view of the foregoing, that if we are to accomplish anything permanent in this direction, we must so change the *conditions* of the mouth that the microorganism of dental decay cannot exist therein. To attempt this may seem utopian, and we are not unmindful of the difficulty of the problem, but we are convinced that this is the only certain way out of the dilemma.

"When we speak of changing the conditions we refer to something deeper and more subtle than a mere chemical reaction. There are agencies at work affecting the life forces of the human economy, the nature of which we to-day know comparatively little. We may recognize an idiosyncrasy, but we are not capable of defining the causes which lead up to it. For instance, there are individuals in whose mouths caries is seldom or never seen, while there are others with teeth as well developed, and where even greater care is taken, who lose their teeth bit by bit despite the most persistent effort to save them. The logical conclusion seems to be that in the one case there is a subtle condition present in the mouth which militates against the active agency of the microorganism, while in the other the conditions are favorable to its development.

"At the present time we are wholly unable to distinguish between these two conditions—we can see only the results. But the time may come—and we trust it will—when we are able to recognize these conditions and treat the patient accordingly. The idea of vaccination for the prevention of dental caries would offer a most delightful topic for the newspaper humorist of to-day, and yet who knows what the future may develop? One thing seems certain—we must learn more than we now know regarding the conditions that are favorable or otherwise to the propagation of the microorganism of caries, and we must also learn how to modify these conditions before we can hope to successfully prevent decay of the teeth."—*Dental Review*, *November*, *1896*.

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A STITCH IN TIME. By G. V. N. Relyea, L.D.S., Oswego, N. Y. Who is there in the dental profession that has not often wounded himself? The left hand is generally the victim, as the right hand holds the instrument. These little mishaps are very annoying and troublesome, particularly if not immediately attended to. If it is a cut, and to any great depth, I allow it to bleed freely, as there will be less inflammation. I keep a fine needle, with a white silk thread in, well waxed. A small wad of bibulous paper saturated with 4 per cent of cocain is placed upon the wound, and a finger on the same hand can hold it there for ten minutes, after which it can be sewed as easily as if it were leather. It will heal by first intention. The parts being brought together, the bleeding will cease at once and you can resume work. This has saved me much pain, inconvenience, time and money.—*Dominion Dental Journal, December, 1896.*

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DENTAL JURISPRUDENCE, NEGLIGENT INFECTION. By H. R. Wiley, A.B., San Francisco. The attention of the writer was attracted by a selection entitled "Dental and Medical Infection," in the November number of the *Pacific Stomatological Gazette.* It is safe to say that articles of the kind referred to will appear more frequently in the literature of the future than they have appeared in the past. Ordinary physiological facts and conditions are fairly understood by the people of the present. A close observance of the logical sequence of events necessarily results from present methods of education, and men are not slow to reason from a given effect back to the cause that is probably responsible for it. In the article referred to the author seeks to impress a knowledge of the grave risks to the patient attending the practice of medicine and oral surgery, rather than to deny those surrounding dental surgery.

However unjust may have been the charges stated in the case under consideration by the writer of "Dental and Medical Infection," the fact that more or less risk of infection attends the practice of surgery, whether dental or oral, is too well understood to need examples. Where proper precautionary measures are uniformly pursued by the surgeon the risk does not exceed the ordinary, and, under such circumstances, if a question arises calling for judicial determination a defendant dentist occupies a strong position, provided his evidence be forthcoming to prove uniform care.

Under the conditions last stated it would be impossible to secure a judgment against the defendant, unless it appeared from the evidence that he had been negligent in that particular instance, and that by such negligence the injury was probably caused. In such a case proof that the defendant dentist had recently, before the alleged infection, treated some person affected with a like disease would have great weight against him. The mere absence in such a case of any other reasonable explanation for the presence of the symptoms, alleged by the plaintiff, would not be without weight in deciding the issue. Not that a decision against the defendant could be reached from the simple fact that no reasonable theory, other than that of his being the cause of the injury complained of, presents itself, or is presented to the mind of the judge or jury; but such a state of the evidence would seem to exclude other possible agencies, which, if they appeared in the evidence, might prevent the plaintiff from producing in the minds of the jury that degree of certainty necessary as a basis for a verdict.

Where the evidence discloses absence of scientific and uniform precaution on the part of the defendant relative to the matter of infection, it will be much easier for the plaintiff to make out his case. The negligence of the dentist would furnish an explanation of the injury so natural and convenient that it would be extremely difficult to divert the attention of the jury from that to any other theory of the case. The dentist must exercise due care, and should always be prepared with competent evidence to prove that he has done so.

So serious are the consequences possible or even probable, as the result of neglect by dentist or oral surgeon to disinfect his instruments, both before and after use, that we think a statutory penalty should be provided which might be enforced against a party, upon a proper showing, for every omission of that kind. It is not enough that the injured party should be allowed his remedy in damages for a wrong of that kind, but the offense should be made a misdemeanor. —*Pacific Stomatological Gazette, December, 1896.*

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GINGIVAL INJECTION FOR TOOTH EXTRACTION. Analysis of a Thesis by Dr. Quere, of Bordeaux. Translated by William Rushton, L.D.S. Eng. During his two years of dental study Dr. Quere had been struck by the variation in intensity of the pain experienced by different subjects during the extraction of a tooth after the gum had been injected with a local anesthetic. He was therefore induced to endeavor to solve the following questions: (1) What are the factors producing pain in tooth extraction? (2) Is it possible to abolish this pain, or at least to greatly lessen it by injections into the gum, and if so, what is the best means to obtain the maximum effect of the anesthetic employed? (3) Is there any local anesthetic which, without exposing the patient to any risk, will give results sufficiently satisfactory to warrant its use in dental surgery?

In reply to the first question, Dr. Quere, in addition to the physical factors of pain (namely the penetration of the forceps, the loosening of the tooth and its removal), lays stress upon the psychical factor of pain. This psychical factor is so considerable that it often produces a fainting attack before an extraction, this faintness being solely due to terror experienced by the patient. As regards the second question, in using the intra-gingival injection, Dr. Quere insists on this precaution, "That it is necessary that considerable resistance to the injection should be felt by the operator during injection." Numerous experiments convince him that one only obtains an anesthesia in proportion to the resistance felt during injection—*whatever the anesthetic employed.* This resistance produces a considerable ischemia (bloodlessness) of the gum, this ischemia being a valuable aid to anesthesia of the part.

When the gum is injected in this manner it is possible to obtain anesthesia of the *gum*, but the author declares that, no matter what anesthetic is used, *complete* anesthesia is never produced for the operation of tooth extraction. According to him it is impossible that a *local* anesthetic, which by its very definition (and experience justifies its definition) acts only on the parts which it touches, can anesthetize the vasculo-nervous tissues which extend between the bone and the tooth. Anatomically those tissues are independent of the gum; it is then absolutely impossible that an injection made in the gum can anesthetize these tissues. Dr. Quere therefore insists on this fact that no one can attribute to any anesthetic the power of abolishing all pain in tooth extraction.

There are cases in which no pain has been felt during tooth extraction following an injection into the gum, but these are in neurotic subjects who already possessed anesthesia of the maxillaries, or who were the subjects of suggestion. Suggestion can even go further, and the patient may be oblivious of any operation having been performed at all.

Local anesthetics in dental surgery act to a considerable extent upon the morale of patients, and the operator should always seek to utilize this moral influence. He should always induce the patient to believe that the injection which has made the gum insensitive will also make all pain of the extraction vanish.

What are the substances then which can be most strongly recommended for producing anesthesia in dental practice? Dr. Quere has successively experimented on sterilized water, sterilized oil, theobromin, caffein, antipyrin, cocain in different forms, eucain and guaiacol. To compare the analgesic value of these substances, the author has always injected them into the skin before injecting them into the gum. He thinks in fact that the skin is the criterion of local anesthesia. The result of his experiments is, that sterilized water never produces anesthesia; sterilized oil sometimes gives a certain amount of local anesthesia due to ischemia. Theobromin, caffein and antipyrin give an anesthesia sometimes pretty considerable in the skin. The most important experiments were with cocain and guaiacol. The conclusions Dr. Quere arrives at are (1) that cocain is much more dangerous in dental surgery than when used in any other operation, and (2) that it cannot produce any anesthesia in more than 80 per cent of cases of tooth extraction. He therefore comes to the conclusion that cocain is not to be recommended, as the risks are great and the chances of obtaining anesthesia small. (3) The substances derived from cocain, such as eucain and tropacocain, are no better than cocain. (4) That cocainized oil and cocain solutions used warm are in no way superior to the same strength of aqueous solution or when used cold. The experiments on guaiacol are not yet concluded, but after having made forty experiments the author draws the following conclusions: (1) Solutions of guaiacol in oil, 1 per cent, injected into the skin give about the same anesthesia as that of a similar preparation of cocain. (2) The injections do not cause pain. (3) In injecting into the gum they give about the same anesthesia as cocain. (4) These guaiacol injections are absolutely harmless. In his hands they have never produced the least scar. Guaiacol appears then in Dr. Quere's experience to be better than cocain in dental surgery, since in equal doses it gives results equal, if not superior to it, without letting the patient run the least risk.—*British Journal Dental Science, December, 1896.*

A PRECAUTION IN CATAPHORESIS. By L. E. Custer, D.D.S., Dayton, O. Some time ago, while producing cataphoresis with the Edison current, I could not account for a shock to the patient even while there was no current flowing through the shunt and presumably none through the patient. It was not until she was told to keep her hands from the arms of the chair that we were able to proceed. After the operation we investigated the cause and it was found to be due to a ground through the water flowing in the rubber tubing of the cuspidor. The fountain spittoon is attached to the chair, and while the metal base does not touch the valve on the floor there is nevertheless a ground through the water flowing in the rubber tubing.

Water is not a very good conductor of electricity ordinarily, but when there is a column of it three-quarters of an inch in diameter and but five feet long it is quite a good conductor—good enough to produce very undesirable effects in cataphoresis. During the application the current could flow through the resistance of only one lamp and from there through the patient to the cuspidor so that there was a flow of current which would not be registered on either the volt or ammeter. Now when the patient having the anode in the tooth touched the iron-work under the chair-arms she completed the circuit and received a shock.

Upon testing what voltage would be operative, it was found that almost one volt would be felt in this way. If the patient would keep the hand perfectly quiet the pain would gradually subside, but if she were to relax or alter her grip there would be pain accordingly. With some patients it is their habit to tighten their grip upon the chair-arm when pain is produced. Now while there would be about one volt pressure through the water in the tubing, had the base of the chair been in contact with the valve on the floor we would have had between forty and sixty volts, which we think would then and there break all connection between patient, chair and operator. The current which would flow through the patient in the above instance would be a direct current and not a shunt current and the pain would be largely increased on that account also.—*Ohio Dental Journal, December, 1896.*

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TREATMENT OF THE DENTAL PULP. By W. A. Siddall, D.D.S., Cleveland, O. Read at Northern Ohio Dental Society, June, 1896. The number of pulpless teeth that the dentist is called upon to treat ought to make him stop and consider very seriously the subject of the dental pulp and its treatment. As dentists grow older in practice and experience they sometimes forget that those younger than themselves are forced to learn by experience alone what might have been learned from a freer discussion of some of the more important practical questions. Not long since the writer had a case in practice, in which the six anterior superior teeth had been filled with gold by an excellent operator, and the fillings were all standing beautifully, but in five of the six teeth the pulps had died and three of the teeth were badly abscessed. When we see such a case as that it should cause us to stop and consider whether we are doing all that we can to preserve the life of the pulp.

Let us briefly review the reasons why it is wise to save the pulp, if possible. (1) For beauty. Especially is this the case in the anterior superior teeth, for in spite of your efforts at bleaching and treating, there is an opacity to any pulpless tooth which mars the beauty. (2) To prevent a greater liability to an incurable disease. (3) To promote longevity of the tooth. We know that a pulpless tooth is more brittle than a live tooth, and while perhaps not more liable to decay, it is much more liable to suffer from fracture.

Why is it that we have so many patients come to us with swollen faces and aching teeth, due to the death of a pulp? Well, you say that "the patient came to me with a pulp nearly or quite exposed and I did the best I could with it, but it died in spite of me!" I grant that there are many such cases, but I am afraid that they are not the only ones in which the pulp dies. A great many times the trouble is the direct result of careless and unskillful work. Sometimes I am startled to see the direction of a pit or the depth of a groove in a cavity that has been previously filled. There is nothing in dentistry which requires more skill and thought and good judgment than to properly place anchorage for a filling without danger to the pulp—to be able to tell where the pulp is in a tooth and to so place anchorage that the filling will not be injurious to the life of the pulp, requires the greatest judgment.

There are so many things to be considered—the age of the patient, the density of the tooth, any peculiar shape of the tooth or cavity. We must look out for any unusual location of the pulp or unusual length of the horns of the pulp. I believe that there are a large number of pulps sacrificed unnecessarily by a lack of care and judgment in the preparation of cavities. It is not so much from a lack of knowledge on the part of the dentist, for certainly enough has been said about lining cavities, and good methods enough have been proposed for the purpose. I say it is not so much from a lack of knowledge, but rather from a lack of application.

There is no question but what the use of hot air in connection with a certain medicament for sensitive dentin, a few years ago, resulted in the death of a good many pulps, and we should be careful to know what effect any new treatment for the same purpose may have on the pulp. No doubt many pulps will be sacrificed by the use of cocain and cataphoresis. It is often a difficult thing to diagnose an exposed or nearly exposed pulp, and especially is this so when the dentin is insensible to pain. I would not underestimate the value of a method whereby the dentin can be desensitized, but would urge that unusual care be exercised in its use. Whether cataphoresis will prove to be detrimental to the welfare of the pulp remains to be seen, but certainly unless great care is used many pulps will be destroyed by its use.

The object of this paper being more for the purpose of calling attention to this subject in a general way than to offer any specific method of protecting the pulp, the writer will briefly outline some of the best modes of pulp protection. (1) I would protect the pulp by impressing upon the mind of the patient the importance of submitting to a frequent examination of the teeth. Those of you who have the best control of your patient have the fewest pulps to cap or destroy and the fewest abscesses to treat. (2) I would protect the pulp by a careful and skillful manner of preparing cavities. (3) By the use of some non-conducting lining where necessary. For this purpose tin-foil, varnish, chloro-percha and gutta-percha are all valuable.

Tin-foil I have used a great deal under amalgam filling and believe that it is a very valuable thing, and under gold we all know that it is a good thing. Oxyphosphate of zinc cement has never seemed to me to be particularly good for the purpose. Whether there is in the acid something which is detrimental to the life of the pulp I do not know, but it seems to me that I find a good many pulps which have died under cement fillings or linings.—*Ohio Dental Journal, December, 1896.*

CASE OF ALVEOLAR ABSCESS DISCHARGING INTO THE ANTRUM.

By W. Buzzell, D.D.S., Port Clinton, O. Read before same Society. In June, 1892, a young woman came to me to have some teeth extracted. She told me she had been suffering for some time with severe pain in the left cheek, which was much swollen I found a fistulous opening into the antrum, between the second bicuspid and first molar, through which a thin watery pus was discharging. The teeth on that side were all present except the third molar, and all sound and alive except the first bicuspid, which had been devitalized, the root-canals having been filled some years before. She said she had never felt any inconvenience from it since it was filled, and I found no tenderness on percussion. Hence I excluded this and thought it to be a catarrhal condition of the antrum.

I treated it for a few days by injecting peroxid of hydrogen, followed by a thorough washing with "Dobell's Solution":

℞	Carbolic acid - - - -	grs. xxiv.
	Biborate soda - - - -	
	Bicarb. soda - - - -	a a grs. xl.
	Glycerin - - - - - -	fl. oz. ij.
	Water - - - - - - -	O j.

Under this treatment the troublesome symptoms soon disappeared; the discharge ceased apparently, and I dismissed the case and allowed the sinus to close.

About six months afterwards she came again with the same trouble, and insisted on my extracting some teeth; in particular the second bicuspid, which was decidedly sore and somewhat loose, though sound and alive. Even at this time the devitalized first bicuspid had given no evidence of guilt. I made an opening into the antrum, at the site of the original fistula, and a large quantity of thin pus escaped. I treated as before for some time, but at each sitting pus was in evidence. At last I did what I should have done in the first place. I drilled longitudinally through the defective first bicuspid and found that I could insert a probe nearly an inch and a half, and that liquids injected into the antrum passed freely through the opening in the tooth. I extracted it, washed the cavity with peroxid of hydrogen and followed it with "Dobell's Solution." The wound closed in a few days and there has been no further trouble.

I have thought this case worth bringing before you, for it shows the necessity of thoroughness in root filling and the danger of needlessly and uselessly extracting valuable teeth, and therefore emphasizes the need of accurate diagnosing and warns against hasty procedures in obscure cases.—*Ohio Dental Jour., Dec., 1896.*

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DIABETES MELLITUS. By Dr. M. Karolyi, Vienna. Translated from "Oesterreichisch-Ungarische Vierteljahrsschrift fur Zahnheilkunde." Madam G., 49 years of age, married and the mother of two children, came to me in May, 1895, complaining of pains in the first right upper molar, and stated that they had been present for two days. The examination revealed diff. periostitis, with slight swelling about the tooth in question, which, otherwise intact, was not affected with caries. The lady had been my patient for four years, but her fine set of teeth required only the occasional removal of tartar. But as the *status quo* did not exhibit the pure symptoms of periostitis, I dismissed the patient after making an incision in the slightly swollen fluctuating buccal side, directing her to call again in a couple of days, in order that I might get a clear idea of the cause and the course of the disease.

Two days later the process had become much worse. There certainly were no special pains present, but the alveolus of this particular tooth was almost entirely purulent; the gingiva had retreated considerably and possessed a ragged appearance; the fixture of the tooth had been reduced to a minimum, so that I was able to remove it without any difficulty. I requested the patient to call on the third or fourth day in order to glean perhaps further information respecting the unusual appearance presented by this case of periost. diff. ac. She did not call, however, until the fifth week after the extraction, and informed me that she had had a bad time; that she had been obliged to keep to her bed, as the wound would not heal, and that the doctor attending upon her considered that she had been infected with an unclean instrument.

There was no need to reassure her as to the supposed infection, as she herself had already told the young colleague treating her that, so far as her dentist was concerned, such a thing was impossible. I put a few questions to her on the supposition that, having regard to the long process of healing, I had before me a case of diabetes mellitus. Her answers were not conclusive, so I requested her to bring a sample of urine. On the next day I made a test, the result of which confirmed my supposition, namely, *sugar was easily demonstrable.* I referred her to a specialist, whose analysis proved the presence of 6.5 per cent of sugar in the urine. In June the patient went to Carlsbad for the cure, in October she died with the usual symptoms of diabetes mellitus.

I have shortly sketched the case, first, in order to draw the attention of my colleagues to similar occurrences, and second, because I have not met with cases of this sort in dental literature.—*Ash's Circular, December, 1896.*

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ANCHYLOSIS OF THE TEMPORARY MANDIBULAR JOINT. By Mr. William Hern. Before the Odontological Society of Great Britain. He related the particulars of a case of this kind in a rather diminutive lad, aged 12, first seen about four or five years ago. The lower jaw was small, undeveloped and practically fixed to the upper, and the one could not be separated from the other for more than an eighth of an inch. The upper jaw was fairly developed and had marked protrusion of the incisor teeth. There was no history of injury to the face or jaw. After mechanical treatment for about six months, feeling that little could be expected of it, Mr. Hern, when the boy's dentition was completed in May last, consulted his colleague, Mr. Bland Sutton, who advised the removal of both condyles of the mandible. The boy came into the hospital in August last and Mr. Sutton commenced the treatment by removing the right condyle, with the result that after the operation the boy could open his mouth over an inch; he had since been able to masticate all kinds of food. There was one very curious thing in connection with the case, namely, the marvelous development of the platysma muscle.

Mr. Bland Sutton said cases of undeveloped mandible had interested him for a good many years, and bearing in mind the tradition of surgery, he had never felt disposed to perform any operation for them; but when he wrote the article on diseases of the jaw for Mr. Treves' "Surgery," he made up his mind that if ever another case came before him he would at once operate and deliberately take out both condyles. Mr. Hern asked him to see the boy, and he came to the conclusion that the left half of the jaw was undeveloped, although the right half was fully developed; the jaw was so firmly anchylosed that by no manner of means could the patient get his mouth open, and he used to stuff his food in with his fingers, much as a schoolboy would fill a popgun. The parents were quite willing to have the operation carried out, and he started with the intention of removing both condyles. He made an incision down to the jaw where the condyles should be, and to his astonishment came on a solid pier of bone, as thick as his thumb. Neither the condyle nor the place where the joint should be could be distinguished, but there was a thin narrow chink out of which fibrous tissue projected. He detached the solid pier of bone, and then cut a piece out half an inch broad completely across it. The facts of the case might be fairly well stated by saying that the ascending ramus of the jaw on the right side was practically represented by a solid pier of bone, half an inch square, firmly anchylosed to the temporal bone. Having cut that piece of bone right through, taking care not to damage the nerve or artery, the patient's jaw was forced open with a powerful pair of forceps, and to his (Mr. Sutton's) astonishment the whole jaw began to move, and he discovered that there was a perfectly good condyle on the opposite side. For a few days there was a little trouble with the wound, a good deal of oozing coming from the under surface of the bone, but after four or five days the patient was perfectly happy. The etiology of the condition was one which had exercised him a good deal, and he thought the most reasonable cause for a lateral anchylosis of that sort might be possibly explained by an injury to the temporo-mandibular articulation with the point of forceps during delivery. An injury at the time of birth might go on very slowly, and ultimately induce in young children an anchylosis such as had been described.—*Dental Record*, *December*, *1896*.

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THE ILLINOIS DENTAL LAW. By W. J. Phillips, D.D.S., Elgin, Ill. Read before Northern Illinois Dental Society. Some time since I had occasion to look up the statute governing the practice of dental surgery in this state, and was amazed at the inadequacy of the law to protect the public from incompetent and dishonest persons. Not only is the public imposed upon by such charlatans, but our profession is brought into disrepute and the less discerning portion of the public learns to distrust dentists in general. The statute as it now stands provides that at the present time any one must procure a license of the State Board of Dental Examiners before commencing the practice of dentistry.

However, a person holding a license may be the nominal proprietor of a dental office and hire on a salary or percentage, or take in partnership, anyone whomsoever he will, who need not be legally or in any other way qualified to practice, and yet by his association with the licensee he receives the protection of the law in conducting an unprofessional and many times a dishonest business.

Now this condition of things is, of course, well known to you all, and probably everyone of you has thought more or less on the subject and will agree with me that some remedial legislation should be had which will change for the better the present state of affairs.

I am well aware that there are many men in the practice of dentistry holding licenses from the state whose professional ideas are very degraded and from whom nothing that would tend to elevate and ennoble our calling could be expected or had. These cases are of course hopeless, as you cannot legislate honor into them. But added to this number are two to four times as many who are engaged in aiding these sharks to fleece those whom their extravagant advertisements draw to them.

It seems to me that this class might be held in check somewhat by proper legislation. As to just what should be added to the present dental law, your individual opinions might and probably would differ.

A suggestion would be to add a section to the statute as follows: "No person acting as an assistant or copartner shall perform operative dentistry, including the taking impressions of the mouth, unless such person holds an individual license from the State Board of Dental Examiners."

We know that legislation in this direction has been attempted and thwarted by the class of unscrupulous persons alluded to, but it seems to me that the object sought is of so much moment that another attempt might be made, and perhaps with united action success might be attained.—*Dental Review*, *December*, *1896*.

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IODOFORM IN DENTAL PRACTICE. By Louis Ottofy, D.D.S., Chicago, Ill. Read before same society. Iodin is an important element. In its various combinations with other elements, such as potassium, mercury, etc., it is one of the most important of the medicaments in common use. It is not necessary to mention before this society its many well recognized properties. In its most active form, that of the crystal, it unfortunately possesses many undesirable qualities. Chemists have, therefore, been active to present it in a form which, while possessing the virtues, is devoid of the vices. The best substitute so far produced is the much maligned drug so well known to us—iodoform.

I have been much interested in the study of a contribution to literature by Dr. Med. A. Schirmer, the German editor of the *Schweizerische Vierteljahrsschrift fur Zahnheilkunde*, reviewing the history of the so-called "iodoform war," and have taken the liberty to quote extensively from the article referred to.

This drug depends for its virtues on iodin, which is simply in a form suitable for handling, by having some of its objectionable qualities concealed, and by being presented to us in a form which makes it applicable to tissue and in situations where the crystals could not possibly be employed.

When it was first employed in surgery, under the impression that it was an antiseptic, its admission to the surgeon's arena was hailed with delight, and notwithstanding its objectionable features it soon became extensively employed as a supposed antiseptic in surgical operations, especially where large surfaces upon the body had been destroyed by disease or removed by the surgeon's knife, as also in gynecology. Eventually its toxic effects were noted, as well as the fact that erythematous eruptions and eczema frequently followed its application, and these two objections, with that of its extremely disagreeable odor, often leading to gastric disturbances, were sufficient to precipitate what became known as the "iodoform war."

The study of bacteriology then developed the fact that iodoform was absolutely worthless as an antiseptic, that in fact in one marked case the preponderance of evidence led to the conclusion that disease was transmitted by its use. And it was an anomalous discovery which disproved this. It was shown that certain bacteria not only were not destroyed, but that they actually lived and thrived in good iodoform for at least one month. The claim was then set up that iodoform was not an antiseptic in the then ordinary accepted sense, but that the successful use of it in practice, which was readily admitted, and which could not be explained, justified the surgeon in continuing its use.

All this controversy, however, led to an attempt to replace the drug by one which was free from objectionable features. The chemist flooded the market, for commercial reasons, while the surgeon, in the hope to get something as effective but free from objections, encouraged this activity.

As a result a large number of substitutes have been presented to us. The principal object to be attained is, to get the combination of elements, so as to contain a large percentage of iodin. If we remember the fact that iodoform contains an exceedingly large percentage (96.7) of this element, we can somewhat account for its powerful action; and at the present day it seems that the virtues of iodoform, as exhibited by the iodin when set free, are due to this large percentage, and that the attempts to produce a satisfactory substitute are abortive, for the reason that nothing has as yet been produced which would yield the same results if it did not contain as much iodin, and when it did undesirable effects were also sure to accompany its use. There are probably other reasons as well, which may be merely referred to by the statement that the results are probably due to the different manner in which the iodin is given off.

Among the most important substitutes placed upon the market as a result of the controversy are the following: Jodol, aristol, loretin, europhen, nosophen, sozoiodol, dermatol, airol, and as an indication that none of these seem to fully fill the requirements and that the attempts to produce something are desperate, I might mention the fact that some German investigators have recently placed upon the market a preparation whose German name is dijodsalicylsauremethylather, but wisely they have also given it the chemical name of sanoform. None of these contain the same proportion of iodin as iodoform. The most powerful of them, iodol, contains 88.9, or about 7.6 per cent less than iodoform. Nosophen contains 61.7, while europhen with only 27.6 and airol, 24.8, do not seem worthy of rank with iodoform as an iodin conveyer. It would also seem perfectly reasonable that the objections raised against it cannot readily be overcome in preparations of such low percentage.

There is no doubt that much of the controversy regarding the therapeutic values of iodoform is due to an entire want of knowledge regarding its action, and at present the nature of the process is wholly unknown. The simple fact, however, always stares us boldly in the face, that this drug possesses exceedingly valuable properties—virtues which make the surgeon hesitate in discarding it, and which have led to a return of its use after an unsatisfactory acquaintance with each new substitute was made.

Iodoform is an indifferent body, and it is known that its action is entirely different from that of other antiseptics. Thus it requires to be first decomposed before it can become active, and the most recent investigations seem to prove that this decomposition takes place most readily when processes of reduction of animal matter are in progress. The worse the ulcerated surface the better and prompter the action. In addition to this, the most recent discoveries seem to be convincing and reveal an important fact hitherto certainly unrecognized, and one which clears up many hazy points, namely, that the decomposition of iodoform, and the consequent liberation of iodin, takes place most actively in the presence of living albumen and alkalin fluids. Now then, if in connection with this fact we remember that iodoform is not at all a destroyer of pathogenic microorganisms, we can account in some measure for its peculiar action. In other words, in the presence of the living alkalin circulating medium, the blood, and albumen, its action is most powerful. The diseased surface may be covered with microorganisms, but under the free and active liberation of iodin further reproduction of them ceases; while on the other hand, in the laboratory, in gelatin, agar-agar, and other media and iodoform, the most beautiful crop of pathogenic microorganisms may be cultivated. The value of such experiments, then, is as nil when compared to the application made to a living body. In addition to this I might call attention to the fact that it has been determined that iodin is freely absorbed by living protoplasm.

With this enlightenment, the determination to adhere to the use of this drug, notwithstanding its advantages, on the part of the surgeon, is readily explained. Aristol has quickly followed iodol into comparative retirement, with dermatol and airol not far behind; it is true that these preparations have their value, but their use is confined within much narrower limits than was anticipated at the start.

As stated before the action of iodoform is unknown. It is unknown whether the products resulting from the decomposition of iodoform act directly on the bacteria, or make their multiplication harmless; or whether the action is on the tissues, by the penetration of these chemical products into them, thus destroying the field of operation of the bacteria.

I am fully aware of the fact that much opposition exists among dentists to the use of this drug, but I have been so firmly wedded to it for more than ten years that I cannot discard it and I have tried every substitute ever offered. While the surgeon has the toxic effect and other disadvantages to contend with, in dental practice there is but one objection, and that is the odor; and that objection is a relative one, and in my opinion and experience can in a great measure be overcome by the proper and careful, confined and limited use of the drug. I use it in the treatment of exposed pulps, putrescent pulps and root-canals in combination with essential oils, preferably eucalyptol.

In all these conditions I do not depend upon it entirely, but as one of the important agents, especially as the final agent in the process of therapeusis I depend upon it implicitly. Thus, in root-canal filling, the canals are filled with an essential oil and iodoform at the sitting just preceding the final filling, and while I do not aim to make even a part of the root-filling of iodoform, I have no hesitancy to allow some to remain in the root, or to force part of it through the apex of the root.—*Dental Review, December, 1896.*

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THE FRINGES OF DISEASE. By Dr. James F. Goodhart. Take, now, another quarter of the fringe of disease. The other day a dental surgeon sent me a patient with receding gums. He was reported to have said that there was too much acid in the system and that the patient must see a physician, for which I thank him. But when she came to me, oh! how I wished I were other than I am —that I were a man who could be satisfied with that view of the question, and could set to work with good heart, or better, good conscience, to neutralize the acid by its equivalent of alkali. Ah, that equivalent! I daresay many of you have heard the late Mr. Corney Grain on the fashionable physician; how, as part of his dietetic treatment, he had been ordered to take a tenderly dressed mutton chop or its equivalent, and how he had been tearing about the town and worrying all his friends to find out what is the equivalent of a tenderly dressed mutton chop. And what is the equivalent of receding gums? I have worried over it for years and yet have no idea. I think it goes with dreaming sleep; with the grinding of the teeth in sleep; perhaps with cramp. It is easy enough to say it is due to acidity. But is it? Is it? It is, alas, a fringe of disease that no garment seems to match. There are many other affections of the teeth, too, that we do not know much about. There are the ground down teeth with tableland tops. These have been called gouty, and I think they are more often found in people of that habit. Then there is a condition of brittleness of the teeth—a good-looking tooth that will suddenly crack and go to pieces in a week or two. Then there are some whose teeth will ache and decay; and there are others whose teeth decay and never ache. There are cases of extreme decay in children that we assume to be due to ill health of some sort, but of what sort it would be difficult to say precisely. And going with the teeth, one may just mention the nails to say what an instructive fringe of disease is there. Only a few days ago I saw a man who had lost all his finger nails, apparently by the aggressive action of some part of the matrix that had grown up and buried them. What was it? But while I am on the subject of the teeth there is another ailment of the mouth that one meets with from time to time and which I should be only too glad to know more about both as to its cause and the best means of treating it. I allude to ulcerative stomatitis in the adult. Ulcerative stomatitis in the child and in the adult are quite different things, for while in the child it is easily cured, I doubt if anything has much effect in the adult in the form I have in mind. It crops up periodically in certain people, and having run its course it dies away again. The disease I allude to is characterized by the more or less sudden appearance upon the tip and edges of the tongue and on the lips and inner surface of the cheeks of a number of small superficial ulcers, often with a yellowish pellicle upon their surfaces. I have seen it spread over a great part of the mucous membrane of the mouth and to be attended in some cases by considerable swelling of the tongue. But as a rule, the ulcers are more or less scattered and are chiefly characterized by their soreness. No doubt this is what some call herpes of the mouth. The feature of the disease seems to me to be that it is a part of the life-history of the individual, for it returns again and again in the course of years and is a very painful and inconvenient malady. If any idea of a cause is formulated it is usually "stomach." But I can confidently affirm that in many of these cases it is hard indeed to make out any derangement of the stomach, and the most careful dieting fails to prevent a recurrence. I think that on the whole, treatment by quinine is the most successful, but as I have said, I am by no means sure that it does not run a course of its own uninfluenced by any drugs. Then there is the so-called ringworm of the tongue; what does it mean? Does it mean that if you could peer inside and see the mucous membrane at work in the life that you would see the same curious serpiginous eruption rippling over the surface of the stomach and intestin as it may almost be said to do over the surface of the tongue? Erythema of the tongue it might well be called, for, like the erythema on the skin, it is full of irritating mystery, the which if one could unravel who knows but that one could find the key to many a physiological riddle. And, by-the-by, before I pass away from the teeth and the mouth, may I say that if only dentistry and physiological chemistry would combine, how much good work there is yet to be done upon the *saliva* of these several conditions that are supposed to be due to acidity and what not. More than once as I have sat in that ominously comfortable dental chair, and have heard and seen the saliva-syphon at work, I have endeavored to stimulate my friend to a recognition of what good material was being wasted. One cannot but think that the systematic examination of the saliva from various groups of cases might give us a good deal of information, positive or negative, upon several obscure conditions of the juices. I do not think the subject has ever been worked at yet from this point of view, but I will make a present of the suggestion to those whom it may seem to appeal to.—*The Lancet.*

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CATHODE RAY FINDS A TOOTH. For the first time in Atlanta, says the *Constitution*, of that city, the X-ray has been used in making a diagnosis of an interesting case in Dr. Catching's practice. These are the particulars: Some time ago a young lady patient consulted him about a loose upper front tooth. An examination of the mouth showed a perfectly sound set of teeth, with the one exception in question as loose as a child's tooth about to be displaced by a permanent tooth. No reason could be given for the condition except that one of the cuspids had never come into place, and the trouble was attributed to this wandering tooth.

This peculiar case presented a chance for the surgical work of the X-ray. Arrangements for an examination were made at Dr.

Catching's residence, where he had in operation one of the most powerful X-ray apparatus in the south. At the appointed time an interested group of spectators gathered to watch the working of the wonderful X-ray. The patient was placed in such a position that the rays from the apparatus would shoot down by the nose, through the lip and bone and around the suspected tooth. A strip of photographic plate, especially prepared by Mr. Motes, and wrapped in a piece of black paper, was placed in her mouth, and the cathode ray allowed to remain on it for one minute. The development of the plate was anxiously awaited, and when at last it was completed it showed with great distinctness the malposed tooth imbedded in the jaw in just such a position as Dr. Catching had diagnosed. The cuspid was trying to force its way out, and in doing so had destroyed one of the young lady's front teeth.

This experiment is the first one in which the X-ray has been used as a means of finding a malposed tooth embodied in the jaw.—*Southern Dental Journal, December, 1896.*

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HEREDITARY SYPHILIS DETECTED BY THE TEETH. By E. H. Williams, M. D. The cases in which there is positive proof of primary syphilitic infection (practically 75 per cent of all cases) form such a majority that the small number of cases in which the history of such infection is lacking is generally ignored. The typical "man of the world"—ambitious, fond of society and high living, a light sleeper and a deep drinker—forms so characteristic a picture of the forerunner of the deplorable "paretic," with his delusions of grandeur, that we usually overlook a minor number of cases that present at first few typical symptoms and whose past history may be different in many respects from that of the majority of cases. If such cases are examined it will be found that many of them, while having no history or proof of direct syphilitic infection, do bear unmistakable marks of hereditary syphilis—usually shown by the presence of Hutchinson's teeth. These cases are often obscure, even to the alienist, in the beginning, and the diagnosis is not facilitated by the lack of a characteristic syphilitic history.

I have found that in about 70 per cent of cases of general paresis, in which no history or evidences of primary syphilitic infection could be found, there were evidences of hereditary syphilis in the teeth. In fully 60 per cent of these cases there was no history of excessive dissipation, although almost to a man they had been addicted to the use of alcohol, and sometimes to an excessive degree. In 90 per cent of these cases there were men of anything but the "paretic type"—men of rather sluggish mentality, with corresponding habits. —*Medical Record, December, 1896.*

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PYORRHEA ALVEOLARIS FROM A NEW STANDPOINT. By William H. Trueman, D.D.S., Philadelphia. In a paper read at the last meeting of the Kentucky State Dental Association, Dr. Junius E. Cravens, accepting the theories of Dawbarn and Greene, modifies the treatment of pyorrhea alveolaris suggested by him in a treatise two years ago, and now recommends a treatment closely resembling that of Thomas Berdmore, a distinguished dentist of London, which was published in 1770.

Dr. Cravens' treatment is this: After removing all deposits from the affected roots he lacerates or even tears away the granulation tissue within the pockets, then applies an astringent stimulant of acidulated nature. This is followed, after a sufficient time has elapsed for granulations of repair to be well set up, by an astringent stimulant of a more pronounced and permanent effect. The object of this treatment is to establish *scar tissue.* He assumes that pyorrhea is a periostitis, and advances the name *alveolar periostitis* as proper and fitting for this affection. The cure of periostitis, he says, demands the establishment of scar tissue, vide Dr. Dawbarn in the "Reference Hand-Book of Medical Science" and Greene's "Pathology and Morbid Anatomy."

Berdmore says: "The treatment is partly medical and partly surgical. The former consists in removing the disease of the whole body by a due course of medicine, and in washing the mouth frequently with antiseptic and astringent liquors rendered slightly acid by means of orange, lemon or sorrel-juice, or vinegar. The surgical treatment consists in scarifying and pricking the affected gums and destroying their tender outer skin in such a manner as to occasion a fresh shooting forth and elongation of their substance, and such a solidity as will endure the usual impressions of mastication. When the gums have lost their connection with the teeth, or when they do not embrace them closely, cutting a small slip away from the fore part is of considerable service, for the new gum will then adhere to the tooth, or at least embrace it more closely." He recommends the use of opiates, camphor and nitrous ether to remove or mitigate pain, recognizes the importance of thoroughly cleansing the teeth of all deposits, and states that scarifying may have to be frequently repeated, noting an instance of five or six operations in one case where "The incisors of both jaws were entirely naked to the extremity of each root;" very loose or carious teeth are to be extracted.

Robert Wolfendale, a student of Berdmore, writing in 1783 disputes the curability of extreme cases, recommends the use of astringent lotions. removal of tartar and, before the disease has reached the incurable stage, the lancing of the gums, sometimes daily for a fortnight; in case of great thickening of the gums considerable portions should be cut off. He claims that it is *usually* curable so long as there remains imbedding the roots of the teeth enough tooth-supporting tissue to securely hold them; that to restore disordered tissues to health is all that can be expected. He further says that when root exposure is occasioned by accident it will frequently be readily restored by nature, generally without the assistance of art, but when the exposure of the smallest part is the consequence of adhesion of tartar, of the scurvy, venereal affection, or the imprudent use of mercury, he never saw the least disposition of the gums to grow to the teeth although assisted by scarification, or stimulating, balsamic, astringent or any other sort of washes or applications. Jourdain, 1778, says: "Those who think they have made cures by scarification, etc., by cautery, issues and the like have confounded this with suppurative fungus of the gums alone."

These remarks of more than a century ago are similar to those made in a discussion of this subject to-day. Then, as now, it was a much debated question whether these disorders were merely local, or wholly or in part systemic. Writers of the present time would probably be surprised to see their productions in parallel columns with those of men who lived before the century began. When the men of to-day think that the disease is becoming more frequent, is the outcome of modern ways of living or the result of imperfectly performed dental operations, they probably do not know that a century ago it was so prevalent, so intractable, so productive of tooth loss, that it was called *devastation of the teeth*. Hayden, in 1822, says: "This disease, from the nature and extent of its ravages, as great or more so among the opulent and rich as among the poorer classes of society, has at different times engaged the attention of some of the most skillful physicians as well as professional dentists in Europe, and in the course of treatment they have pursued they have severally resorted to every means for its cure that medical skill could suggest * * * notwithstanding which, their efforts have proved ineffectual."

The profeſsion has been unsettled regarding this disease from its earliest mention to the present day. Much time and labor has been spent in rehabilitating discarded theories, or in the effort to supplant one unsatisfactory theory by another. Fauchard was inclined to reject the theory that certain diseased conditions of the system were the cause of it. Dr. Trueman's impression is that this is the position of the most of the profession at present.

The points upon which there is the least controversy are:

1. It is a disease seldom appearing until the patient approaches middle life. While exceptions to this have been frequently noted, they are, however, infrequent and exceptional, and have been so recognized.
2. It is not, at the onset, usually accompanied by any marked systemic derangement.
3. It usually begins insidiously, runs an uneven course, and is prone to relapse.
4. It always ceases completely and permanently when the teeth are lost.

The close physical resemblance and the very marked pathological differences between pyorrhea and that acute inflammation of the gums due entirely to systemic conditions, known as stomatitis, has already been noted. Stomatitis at its height resembles pyorrhea at its worst, so far as it affects the oral cavity. Stomatitis, however, is a disease of childhood, pyorrhea of mature age. It is very probable that the oral symptoms linking together stomatitis and pyorrhea are alike due to germ infection, the sudden and violent onset in stomatitis being due to quickly developed conditions favoring germ activity, and the rapid subsidence in mild cases, it has been explained, is due to violent inflammation proving fatal to germ life. In severe cases so violent is the inflammation that gangrene with all its attendant seriousness not infrequently supervenes. In adults the gums are not so responsive to systemic disturbances, nor yet do slight disorders of the nutritive functions, as in early childhood, so quickly or so profoundly affect general health. Under these conditions stomatitis becomes far less frequent and far less serious. It still, however, preserves its well marked characteristics distinguishing it from pyorrhea alveolaris, and these may have value in determining the cause and character of the latter disorder. Dr. Trueman is strongly impressed that, after all, pyorrhea alveolaris is merely a germ infection. It may be serious, involving a large territory and incurable, or slight and easily controlled, just in proportion as the oral conditions favor or repress germ activity. How far the general health may affect these conditions we have, as yet, but little reliable data. The pathology of stomatitis is suggestive upon this point. We may bear in mind that for the germ to become a pathological factor three things are necessary: (1) the germ; this, however, is omnipresent; (2) a dwelling place; (3) congenial surroundings. In stomatitis the disturbed circulation, due to the primal lesion resulting in the swollen gum margins, furnishes over a widely extended territory abundant opportunity for germ colonies, and the surroundings seem particularly favorable to germ activity. Disordered digestion in the child and in the adult seems to produce in the oral cavity conditions especially favorable to germ growth. In proof of this the furred tongue, for ages recognized as a reliable and delicate indication of gastric disturbance, is now known to be due to the presence of germ life—a form of germ life that immediately disappears when the stomach resumes its normal condition.

In early life, while the gum-tissues firmly embrace the teeth and fully occupy the dental interspaces there is little opportunity for any form of germ-life to obtain a permanent foothold. Later, however, when normal changes materially alter this condition of affairs, when the saliva becomes more loaded with inorganic matter, when there is a more marked disposition to tartar deposits, when the gum-tissues relax their firm embrace of the teeth and as a result debris-collecting spaces are formed along the gum margins and between the teeth, when, in addition to all this, as the natural result of normal wear and tear and the inevitable loss of tooth substance, the gum and tooth-supporting tissues become more and more exposed to violence and accidents of various kinds during mastication, etc., we readily see how, in a thousand and one ways, opportunities for germ infection are vastly increased—all without the slightest assistance from any systemic disorder. The natural secretions of a healthy human mouth are the most potent of germicides, as indicated by the majority of healthy persons breathing the germ-laden dust of a large city. It is only when the germ finds a convenient place in the mouth, or when the potency of the secretion is temporarily impaired that it gets in its work. The changes in the oral secretions account for the changes of the disease; its always-present effects invite relapse until the absence of teeth destroys its favorite camping ground.—*International Dental Jour., Dec., 1896.*

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AMPUTATION OF THE DENTAL PULP. By Dr. H. Siegfried, of Vienna. Every dentist who gives root-treatment any considerable attention, and in these days of conservative practice the large majority do, has learned with what difficulty pulps are extracted from bicuspids and molars. And it not infrequently happens while treating narrow or winding pulp-canals that the contents are not fully removed. In order to avoid the uncertainties accompanying these operations, as also to evade the tediousness of the work, the idea presented itself to amputate the pulp. Doctors Weitzel and Herbst have for some years been occupied in this study; and later Dr. Baume with his specific has claimed the consideration of the profession, but the method he recommended did not fully insure success. The Sublimate-Thymol treatment of Dr. Miller demonstrates even greater progress in this direction.

Through theoretical enlightenment I arrived at the conclusion that, in the practice of amputation—thus far fruitless—one might employ pulverized coal. Formerly we used pulverized coal in connection with cotton in the filling of root-canals (Foerberg), but the coal serves me in advance of this, in that I employ it in root-amputation.

It is a known fact that coal has the property of allaying gas-formation, primarily those gases which are formed in the process of decomposition of organic substances. Ammonia and sulphur, according to Binz, are completely held in limitation or stabilized in the presence of pulverized coal. In consequence of this fact I conclude that coal would make an efficient root-canal filling material. In the event of gases forming, subsequent to the coal-filling, they would be easily stabilized through the benign influence of the coal, thus preventing escape of the gas through the apical foramen, and so avoid inflammatory processes.

The coal has, aside from this latter property, a direct antiseptic or anti-putrefactive power. If water be placed in jars whose inner walls are lined with pulverized coal we find that the water remains clear for a considerable period. Fresh cadavers which are buried in pulverized coal do not suffer putrefaction, yet they waste away, leaving nothing save the osseous and fatty portions, while the coal is saturated with saltpetrous acid. These truths have inspired me to engage this powder in the filling of root-canals. To increase its antiseptic properties I add a small amount of thymol. After applying arsenic to the tooth in question I seal it tightly with cement. After a lapse of twenty-four to forty-eight hours, having adjusted the rubber-dam, I remove the arsenical application; then I prepare the cavity, amputate the pulp and prevent serious bleeding by washing the cavity with sublimated spirits. I now fill the pulp-chamber with the dust-fine pulverized coal (linden-wood), adding some thymol. I next cover the filling with gutta-percha and immediately proceed to insert the desired permanent filling. This method I resort to in the treatment of bicuspids and molars, while in the treatment of the anterior teeth I prefer extirpation of the pulp, since the operation is less difficult and there is less likelihood of discoloration of the enamel.

I have, in company with Dr. Metzke, practiced this particular method nearly a year, during which period we have treated about 250 cases and have not been compelled to record any unfavorable consequences. This latter result leads me to believe that this method of procedure will warrant commendation. Even third molars, suffering from former pulpitis and incurable on account of the inaccessible position, are saved by the foregoing described process. This treatment will appeal to all, especially those in the army service, who cannot afford the necessary time and expense accompanying extirpation of the pulp.

It will afford me great pleasure to learn that others in the profession are employing my method and I hope to hear of like favorable results.—Translated by Dr. B. J. Cigrand, from *Deutsche Monatsschrift fuer Zahnheilkunde, December, 1896.*

* * *

THE ROENTGEN RAY. By William Lincoln Smith. The discharge between the poles of a static or influence machine is apparently the same in all its length; a series of photographs, as those by

Trouvellot, taken in perfect darkness, will reveal a very distinct and characteristic difference between the two, according to which pole the discharge was derived from. It is only by photographs the difference can be detected. This discharge can be deflected, momentarily, by passing the poles of a magnet near to it. If the discharge is sent through atmosphere at a diminished pressure, or greater or less vacuum, it is at first of the ordinary thread-like form. With an increasing vacuum it begins to broaden, approaching more nearly the form of a glow extending through the tube, the light becoming paler, finally reaching a point where we get what we might call billows of light running from one terminal to the other. The point of interest does not lie in the breaking up of the discharge, but in the difference which begins to appear between the two poles. Supposing the discharge made from the anode or positive pole, passing across to the cathode or negative pole, of aluminum wire one thirty-second of an inch in diameter, at the very tip of the one pole there would be a very brilliant star-like point, at the other pole the discharge is more evenly distributed over the whole surface of the wire, not appearing to touch the wire. There is a small space of absolute darkness in the midst of the glow around the pole in which nothing has been discovered by photography or other known methods. The higher the vacuum is increased the larger does the dark space become; a complete vacuum would fill the whole tube with darkness in some cases. When the dark space is extended enough to include both terminals, the tube becomes apparently impervious to the electric spark. To produce the desired result an apparatus has been devised so arranged that both poles are situated in the vacuum-tube within half an inch from each other; then the two electrodes are connected with a spiral tubing at points just before they enter the vacuum-tube, and the path around through that spiral tubing from one electrode to the other is something like two and one-half yards, while the distance across it is about half an inch. Though electricity takes the path of least resistance, it will pass through the tubing rather than from pole to pole in the vacuum-tube, because both terminals have their tips in the dark space.

Phenomena of the electric current shown in vacua and not in the open air are: Firstly, the disappearance of all effects from the anode; secondly, the dark space around the cathode was enormously extended; thirdly, the so-called cathode rays were produced

—that is, when the discharge was allowed to pass from anode to cathode, apparently there were produced at the cathode another set of rays which traveled and passed in straight lines, and once deflected by the magnet did not return to their original path. It was found that certain substances exposed to these rays became luminescent. Professor Hertz discovered that films of gold, silver, platinum or copper if thin enough were transparent to the cathode rays. Dr. Lenard, of Bonn University, found that the cathode rays glowed in open air for a distance of eight centimeters, that substances would luminesce outside as well as inside the tube, that the rays would not traverse any great distance and they were deflected by the magnet outside the tube. Roentgen found that the tubes deteriorated unless kept in darkness. Having covered a tube with black paper he noticed that a piece of platino-barium-cyanide paper near the tube glowed. In developing a photographic plate afterward, he found not only the picture he was working for on it, but also the image of a little brass spring on the plate-holder. The plate in its holder was standing up near the tube at the time when he noticed the paper glowing, in such a position that the spring was between the plate and the tube. As he had made no provision for the exit of the rays from the tube, he knew that the plate had been affected by an invisible agent. It was not long before he announced that substances hitherto considered opaque were transparent to the effects of an unknown agent which he called the "X-rays."

While he could make no positive statement as to the exact manner in which they were produced, he declared they could not by any possibility be cathode rays: first, because the Roentgen rays can never be deflected, the most powerful magnetic fields having no effect in turning them from straight lines; second, the Roentgen rays travel enormous distances, whereas the cathode rays do not reach more than eight centimeters.

The point on the tube where the cathode rays struck and produced their brilliant green luminescence was apparently the source of the rays, but that question has not been settled; it is now accepted that Roentgen rays as produced at the first point intercept the cathode rays.

The best results in photography are obtained from the static-influence machine driven at a high frequency, allowing the spark to pass through the tube from anode to cathode, and under certain conditions (which are not to be published until the system has been thoroughly tried); when it is wired in a certain way very much more powerful effects are obtained than in any other way.

The photograph, however, is open to certain objections; it requires time to take and develop pictures; secondly, it furnishes a permanent record, which is not wanted, and may not prove to contain what you are looking for, so that it is not quite so satisfactory as examining the object itself.

Mr. Edison has made this possible by the invention of the fluoroscope. The photographs are not to be compared to the pictures. In the picture of the hand not only every bone and its joints, but when properly adjusted, the cartilage, the folds in the skin, the lines of the cords and sometimes the nerves, are seen with wonderful clearness. The diseased portion of the lungs of a person in consumption has been traced out, being distinguished by its absolute opacity. A case of enlarged spleen has shown up quite satisfactorily; you can see the liver rise and fall and determine the exact position of the organs within one-sixteenth of an inch; you can just see the tip of the kidney which is apparently more opaque and denser; the liver rises and falls in front of it as the patient breathes; you can see the ribs which look like the boards of a gate; you can see the spine with its many joints; you can see the sharp definition of the teeth as they run down into the jaws, and the limits of a filling in a tooth.—*International Dental Journal*, *December*, *1896*.

A SOLVENT FOR GOLD AND SILVER—Which owes its efficiency to the presence of potassium cyanid, is claimed by Johnes Atkins, and is produced by heating a dry mixture of one part of potassium ferrocyanid with about two parts of salt to incipient fusion. The product is poured into molds, and is quite stable in the air. For use it is dissolved in water.

X-RAYS AND SIGHTLESS EYES.—In our editorial columns of a previous issue we deprecated the idea of holding out to the blind any strong hope of their being made to see by the X-rays. We have always had the greatest confidence in Mr. Edison's wondrous powers and magic-like achievements, but in the present case we did not feel that he was justified in calling forth hopes which could, in most instances at least, if not in all, result only in disappointment. In a recent number of the *Electrical Review*, Nikola Tesla found little ground for any claims of making the blind see. The rays have not been demonstrated to be transverse vibrations, and at best refraction would be necessary to project a sufficiently small image upon the retina. As it now is, only a shadow of a very small object can be so projected.—*Med. Record.*

Letters.

NEW YORK LETTER.

NEW YORK, January 14, 1896.

To the Editor of the Digest,

MR. EDITOR:—Again we are called to note the demise of one who was best known to us—Dr. I. A. Salmon, of Boston, an upright man and one that you felt better for having met. Everything that he did had the stamp of integrity upon it, and his mallet and chair brought him well-earned repute. He was from the first one of Dr. Atkinson's most earnest admirers and supporters. His lectures at the beginning of the Harvard Dental School were examples of simple practice effectually presented. His cheerful smile fell acceptably on all. At the age of 67 he has ceased from his labors, but his works follow him.

Another well-known practitioner in Washington, Dr. Wordsworth, will be missed from his familiar place. For forty years he stood at his chair dispensing a grade of ability which bordered a little on the old school, yet he liked the atmosphere of the modern. We last met him on the streets of his city, accompanied by his favorite hunting dogs. Our first meeting (where we also met the remarkable practitioner, Dr. Maynard) was at the convening of the Maryland and District Societies. Dr. Wordsworth took us all over Washington in his carriage and then to his home to dine. His wife was a charming woman and had helped him much.

At that time he had President Grant for a patient and he called our attention to the president's teeth and mouth, for Riggs' disease was there and it followed him to his grave. We say here, as we have said before, we think that if he could have had his mouth treated then as he could now, he need not have had that awful affliction, the cancer. Although Riggs' disease may "have been known and treated in 1700," it has since then stolen a march on many a victim, and perhaps the "dead march" of more than might be supposed. The teeth are a greater indication of health or disease than many, even of the medical fraternity, believe. Dr. Bodecker tells us that he noticed such a marked change some three years ago in the teeth of Professor Heitzman that he showed him the importance of making an examination, but the learned doctor pleasantly laughed it off.

We learn that Dr. Bodecker has a son at Ann Arbor who expects to graduate this year. He is a promising young man and expects to become his father's successor. Dr. Bodecker has been an incessant worker and has built up a large and lucrative practice. It is marvelous how much time he has put besides into his microscopical labors. He tells us that Dr. Heitzman and he had extensive plans laid out for studying the development of teeth. It took some time to perfect their plans and secure the necessary specimens, and now, just as they had succeeded, the scheme is aborted, since Dr. Bodecker thinks his health will not allow him to engage in the undertaking alone. We trust that this diagnosis of his health and his prognosis will not prove true, for he is too young and too valuable a man to step aside yet.

We note a remark in a recent journal that dentistry of all professions should not be practiced for God's sake. We can hardly agree with this, for the more a practitioner works outside of himself the better his chances are for a life productive of an enjoyment which will outlast anything gained in the self life.

The "Great Expectations" is at hand and it speaks for itself—the new *Items of Interest* is original in matter and design, and is in most excellent taste. The new editor has a corner of his own from which we expect to see much of interest, as he is a literary as well as a scientific man.

All the mean men are not dead yet. Think of a multimillionaire keeping a dentist out of his bill seventeen months and then being brought to court, and after arguing some time he steps up and gives his check for the amount ($200), less the costs, and when the check was presented at the bank it was returned—"no funds." Finally, after several promises to make it good he allows himself to be sued for non-payment. This seems hardly grateful to a faithful dentist. The only remedy seems to be a cash basis, for if we do not do quite so much, we are at least sure of pay for what we do.

By common consent Dr. Williams' paper and illustrations before the Odontological Society are judged to be the ablest ever presented before any body of dentists. As those present said, it needed no discussion; it was a demonstration of facts. It dealt with predisposing causes, active causes and structure. Miller and Black were strongly sustained. It is thought that the etiology of the decay of teeth is at last solved. Dr. Williams was accorded high position among scientists on all hands. His full explanation of how misleading ideas may be formed by optical delusions made a decided impression. He did not know of Dr. Heitzman's death until he reached this country and read of it in the DIGEST. In the opening of his paper he paid a warm tribute to his late antagonist. Altogether the whole occasion was a fitting anniversary of the society, and a hearty greeting was given to the many guests present, among whom were Harlan, Black, Darby, Kirk, Bogue, Allen, Burchard, McQuillen, McManus, and dozens of others. The aftergathering of a social nature was fully up to date and complete in every detail. All who spoke were happy in their remarks and complimentary to their guest, all of which was feelingly acknowledged by Dr. Williams. Dr. S. G. Perry was the poet of the evening. He seems to be untiring in his versatility and certainly he made no "mistakes" in this effort. The bringing of Dr. Williams to this country and all the arrangements reflect much credit upon the committee, which begins with W. W. Walker and ends with Jarvie and Perry. Success is the best evidence of success. Cordially, NEW YORK.

TO REMOVE CEMENT.—A piece of wet pumice-stone will remove cement from the mixing slab with neatness and dispatch.—*Geo. M. C. Barnard.*

HOW TO STERILIZE INSTRUMENTS WITHOUT DANGER OF RUST.—Iron, steel and nickel rust only when exposed to the combined action of carbonic acid, moisture and oxygen. If any one of this triad is absent or neutralized the metal remains unaffected. Certain alkalies neutralize the carbonic acid in water, and when this is neutralized no rust forms on metals when immersed in it. After careful experiments, Levia has found that the best alkali for the purpose is natrium hydrooxydatum causticum ($NaOH$). He adds a small quantity of the crystals to boiling water, and after they are entirely dissolved and mixed, he immerses the instruments and boils them *ad libitum*, with never a trace of rust nor tarnish when they are taken out. One-fourth of one per cent, or even less, of the natrium is sufficient, but it must be pure, with no sulphur, as this causes rust. If knives and scissors are wrapped in gauze to protect the edges, they can be effectively sterilized in this way without the slightest injury of any kind. It is equally effective and non-injurious for drainage tubes, etc., but is not adapted for aluminum nor silk and it softens brushes. If the instruments are left afterward wet and exposed to the air, rust will form, but they can be kept several hours, if necessary, in sterilized water to which 1.5 to 2 per cent of the natrium has been added.—*Wein. klin. Rundschau.*

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

OUR LOSS THE NATION'S GAIN.

Lyman J. Gage, president of the First National Bank of Chicago, has been informally offered the position of Secretary of the Treasury, and has decided to accept that office if appointed, so he will undoubtedly be chosen. No one in the country could be more fit for the place, and we feel that President-elect McKinley is fortunate in being able to secure so valuable an acquisition to his cabinet. However, the Dental Protective Association suffers a loss, for, as the members at least know, Mr. Gage is the treasurer of the association. He very kindly agreed to serve in that capacity when the association was first organized, although he was overwhelmed with business and civic cares, and has always done anything he could for it cheerfully and readily. The thanks of the association are due to Mr. Gage, and we are confident that the gratitude and good wishes of the members will go with him.

ORIGINAL INVESTIGATION.

Much has been said and written about original investigation and the great need of more of it, but there are few members in the present ranks of the dental profession who are willing to make the exertion and sacrifice necessary to success in this department. And what is still more unfortunate, there are but few who have the kind of ability necessary to take the lead in making original investigations, the results of which can be relied upon and accepted as facts.

For these reasons, when a well-known authority gives us such an array of facts and heretofore unthought of conclusions as we find in the papers of Dr. Black on the question of amalgam, also on what he has called the "physical characteristics of the teeth," we wonder why such a man is not enabled by his profession to give all of his time and ability to original work. And why do we not do this? Dr. Black should have furnished him all the equipment needed and be employed by his profession that we may get the benefit of his genius while he lives. This subject is not new—we have been urging publicly and privately for many years that when such talent is found it should be engaged and the services well paid for by our profession.

The first plan which suggested itself to us was that it could be managed through the American Dental Association, and it was with this end in view that we organized a plan whereby that organization, instead of being in debt, as it was each year then, has accumulated in a few years from its annual membership fees several thousands of dollars. Some of this money has been expended to advantage in section work, but neither the plan of expending the money in section work nor the section work in general has proved a great success. But we did not start out to discuss failures.

Studying these reports of Dr Black's, as published in the *Dental Cosmos* during the year, has again filled us with the desire to see a move made which will give the profession the benefit of all Dr. Black's time for research and experiment. The paper on the physical characteristics of the teeth may not prove of as much practical value as that on amalgam, yet the more it is studied and understood the more important it becomes. The investigations of amalgam as a filling material are certainly of inestimable importance. With the instruments for making the various tests and the information gained from Dr. Black's long and arduous labors we and many others have been able to obtain a knowledge of amalgams which cannot be overestimated. It is not our intention to discuss at this time in detail either of the published papers, but we wish to solicit some plans and opinions of the same which will enable Dr. Black to continue his researches and compensate him well for what must be a great outlay of time and money. Our pages are open for a free discussion of this important subject.

Book Reviews.

ARTIFICIAL ANESTHESIA—A Manual of Anesthetic Agents and their Employment in the Treatment of Diseases. By Lawrence Turnbull, M.D., Ph. G., Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; Late Honorary President to the Otological Subsection of the British Medical Association, and of the Section of Laryngology and Otology of the American Medical Association. Fourth edition. Revised and enlarged, with illustrations, 1896. Published by P. Blakiston, Son & Co., 1012 Walnut street, Philadelphia, Pa. Price $2.50.

This is a convenient hand-book for the dentist or physician, on the selection and administration of various anesthetics. It also gives a complete history of all anesthetics from their discovery to the present time, and some space is devoted to the manner of administration abroad. To quote from the author, his object is:

"1. To give in as concise a manner as possible a description of the most available agents that may be successfully and safely employed as anesthetics.

"2. To present the chief chemical tests, the purity of each substance considered with its composition, physical characters and medical properties.

"3. To exhibit the best methods of administering the various anesthetics, to give careful directions and to state the precautions to be taken to avoid risk to the life of the patient.

"4. To note the personal experience of the author, his assistants and friends, with anesthetics and the various forms of inhalers in use, with a selection of the most approved, not withholding, however, the objections, but noting the experiments of other reliable investigators.

"5. To compare the relative mortality for all the anesthetics now employed, endeavoring to assist the reader in forming a fair and candid opinion of this most important subject, which has for so long a period occupied the attention of the public as well as the medical profession."

Notices.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

At the annual meeting, held December 14, 1896, the following were elected officers: President, Geo. B. Perry; Vice-President, G. W. Schwartz; Secretary, H. H. Wilson; Treasurer, Edmund Noyes. Member of Board of Directors, W. H. Fox. Board of Censors, E. K. Bennington, Chairman; A. G. Johnson and H. J. Goslee.

H. H. Wilson, Secretary.

ST. LOUIS DENTAL SOCIETY.

Following are the officers for 1897: President, John H. Kennerly; Vice-President, P. H. Eisloeffel; Corresponding Secretary, John G. Harper; Recording Secretary, C. C. Cowderly; Treasurer, A. J. Prosser; Committee on Ethics, J. H. Pfaff, J. G. Harper, William Conrad. Committee on Publication, F. F. Fletcher, W. M. Bartlett, DeC. Lindsley.

ALUMNI ASSOCIATION OF NEW YORK COLLEGE OF DENTISTRY.

The annual meeting of the Alumni Association of the New York College of Dentistry was held at Dr. Z. T. Sailer's office, 40 West Thirty-third street, New York City, January 13, 1897. The following were elected officers for 1897: President, F. A. Chicherio, '88; 1st Vice President, A. M. Dailey, '90; 2nd Vice President, G. W. Baab, '88; Secretary, F. T. Hannemann, '91; Treasurer, Z. T. Sailer, '80; Curator, F. J. McLaren, '87; Executive Committee, Edward Fox, '88, Chairman; F. Van Blascom, '88; H. R. Armstrong, '94.

F. T. Hannemann, Secretary.

CHICAGO COLLEGE OF DENTAL SURGERY.

The dedicatory exercises of the new buildings of this college took place on Friday evening, December 4, 1896, when speeches were made by Dr. Truman W. Brophy, W. M. Lawrence, D.D., Judge Richard S. Tuthill, Dr. John B. Hamilton, Prof. M. P. Thomas, of Lake Forest University, and Dr. C. N. Johnson.

Dr. Brophy, the dean of the college, opened the exercises with a brief address in which he touched upon the growth of the college and of the history of dental education in the city of Chicago. He said the Chicago College of Dental Surgery was the first institution of its kind in this country to introduce and use for the benefit of its students a complete apparatus for the cultivation of bacteria, thus demonstrating the active agents that cause caries of the teeth and methods for effecting their destruction. The institution was the first to organize freshmen students into classes for practical work in dental technology, both operative and prothetic. In addition to these innovations in teaching, clinics were organized in the college and conducted for the benefit of the senior students by the most skillful and successful practitioners. Realizing the necessity of securing a permanent location for the college, in 1888 the lot was purchased upon which the building now stands, situated on the corner of Wood and Harrison streets. The first section of the structure was erected in 1893, and the first course of instruction began in it November 1 of that year. Beginning with the present year plans were perfected and the building of 1893 has been doubled in capacity, so that the college now consists of a six-story structure, having a frontage of 85 by 120 feet. Each floor contains an area of 10,080 square feet, divided in accordance with suggestions and plans made after having carefully examined the best regulated dental schools in the United States, thus enabling the faculty to incorporate the most modern features in its construction. Dr. Brophy then traced the growth of the college from the summer of 1883 up to and including 1895-'96. The faculty of 1883 consisted of three, matriculates eighteen, and no graduates. In the session of 1895-96 the college has eighty-seven teachers and five hundred and three matriculates.

The next address was delivered by Dr. W. M. Lawrence, who said that he knew of no similar history along educational lines anywhere. He had the honor to be somewhat connected with the Chicago University and its growth had been phenomenal, yet, at the same time, he could say pretty accurately that the figures given by Dr. Brophy proportionately exceeded any statistics which we might have the pleasure of presenting for the contemplation of the citizens of Chicago. He congratulated the faculty on having erected such a fine structure.

Judge Tuthill was the next speaker and said that when he was a boy people never had their teeth attended to, so that every old man and old woman must have been toothless; that they went out of the world in about the same condition as to teeth that they came into it. At that time everyone seemed to think it was the normal arrangement and that people when they got old had no business with teeth. He believed that nothing had been done in medicine or surgery that had so added to the happiness of mankind as the work that had been done by skillful dentists.

Professor Thomas followed Judge Tuthill. He was glad to see evidences that the Chicago College of Dental Surgery was not simply growing in extent, but becoming a genuinely progressive institution, an institution which is adding not simply to numbers in its faculty and students, but to its curricula, to its enlarged and advanced requirements, an institution which means a better educational product, men who are better able to do the special work to which they are called and to which they are devoting themselves by virtue of the broad, generous culture which the college was giving them.

Dr. John B. Hamilton, professor of principles and clinical surgery in Rush Medical College, was the next speaker. He said that we were apt to think, in the clamor of a jubilee, that everything was modern with which we had to do; that we forgot the filled teeth of the mummies and the Aztecs, and the specialism which existed in the old Alexandrian school. Coming down to modern times we could congratulate ourselves that after a long period of darkness the revival of dentistry was due to America. In 1887, when he was executive officer of the first international medical congress held in this country, the question of the representation of dentistry as a distinct section came up, and after due consideration it was decided to give full accord to the dental profession in that congress the same as to any other branch of medical science. It was greatly to the credit of this country that this was done, as America had reaped the benefit of it. The French government sent a representative over here to inspect and investigate our dental colleges and to report to his government as to their condition, and what he thought of our method of teaching; and this report, by Dr. Kuhn, of Paris, on the dental art in the United States, was, in the opinion of Dr. Hamilton, one of the most comprehensive reports ever published on the subject. At the same time the report was most flattering, in that the author stated that European dental colleges could in no way compare with those in the United States. Dr. Kuhn spoke particularly of the Chicago College of Dental Surgery, but which at that time was under different auspices from those at present. The Philadelphia Dental College was particularly mentioned. After citing the different conditions that prevailed in dentistry in foreign countries and comparing them with the dental colleges in the United States, he (Kuhn) framed a bill, to be presented by the Minister of the Interior for transmission to the French Chamber of Deputies, with a view to procuring a charter for a dental college in Paris that would compare favorably with American dental colleges. No higher praise could be accorded American dental colleges than the compliment paid to them in this report.

As to Dr. Evans, Dr. Hamilton said he was more than an ordinary practitioner of dentistry; he was foremost in the sanitary work of the Franco-Prussian war. The so-called American ambulance was the creation of Dr. Evans. Dr. Evans left his patients, went to the front, organized an ambulance service, and while French surgeons were busy caring for the wounded Evans was busy with the ambulance corps in organizing general hospitals in the rear; and the story of the services of that noble, illustrious man in the Franco-Prussian war was enough of itself to elevate the profession to which he belonged to a high place among the sciences and the educated men of the world.

Dr. C. N. Johnson in a brief speech said the first dental college was established in this country in 1839, but it was difficult to get at the curriculum of that college at that time. The number of teachers and students at the opening session was four. Dr. Johnson then dwelt upon the importance of educating the public to a proper appreciation of the practice of dentistry. He said that the laity needed education along this line. The people should be taught that the highest aim of dentistry was to add to the comfort, the longevity, the physical beauty and the happiness of the human race.

At the conclusion of Dr. Johnson's speech the students, faculty and invited guests repaired to one of the spacious operating rooms, where refreshments were served and short timely speeches made by Drs. W. C. Barrett, A. W.

Harlan, Thomas L. Gilmer, W. L. Copeland, Mr. C. G. Morrell and Dr. L. L. Skelton.

Excellent stories were told by W. Woodruff, the Arkansas humorist; Opie Reed, the well-known author; Mr. Richmond, the well-known journalist; W. B. Lockwood made a short speech, and Dr. C. N. Johnson recited a poem entitled, "Our Quarrel."

Dr. R. B. Tuller was called upon to sing a song, but instead he asked the audience to join with him in singing "Auld Lang Syne," which they did, and then quietly dispersed.

PROGRAM OF CHICAGO DENTAL SOCIETY CLINIC.

MONDAY MORNING, February 1, from 9 till 12 o'clock, at the Northwestern University Dental School, corner of Franklin and Madison streets (five blocks walk west from the Palmer House, then one block north).

1. Dr. E. K. Wedelstaedt, St Paul, Minn. Mesio-occlusal Amalgam Filling. Demonstrating the Use of Cavity Measurers or Instruments for Measuring Cavities.
2. Dr. John S. Marshall, Chicago. Surgical Clinic.
3. Dr. S. H. Guilford, Philadelphia, Pa. Method of Starting a Filling Outside of the Cavity with the Aid of Matrices.
4. Dr. B. J. Cigrand, Chicago. A Method of Mounting Gold-cusps on Broken-down Bicuspids and Molars.
5. Dr. W. C. Wendel, Milwaukee, Wis. A Crescent Crown.
6. Dr. E. H. Allen, Freeport, Ill. Gold Filling.
7. Dr. W. G. A. Bonwill, Philadelphia, Pa. *a*. The Vast Use of Pink Gutta-Percha in the Successful Practice of Dentistry. *b*. Illustrating and Demonstrating Some Practical Points (Truths) in the Art of Filling Teeth with Amalgam *vs.* so much *so-called* Science in Dentistry.
8. Dr. L. E. Custer, Dayton, O. The Dangers of Commercial Currents in Cataphoresis.
9. Dr. Edmund Noyes, Chicago. A Platina Gold Incisor Corner.
10. Dr. W. R. Clifton, Waco, Tex. Bleaching Discolored Teeth with 25 per cent Solution of Pyrozone by Cataphoric Application.
11. Dr. L. P. Haskell, Chicago. Porcelain Work.
12. Dr. G. V. I. Brown, Duluth, Minn. Treatment of Pyorrhea Alveolaris.
13. Dr. W. H. Taggart, Chicago. Carving Porcelain.
14. Dr. G. H. Wilson, Cleveland, O. Staining Porcelain Teeth.
15. Dr. B. D. Wikoff, Chicago. Dr. Wikoff will Prepare and Imbed in Plaster of Paris a Number of Freshly Extracted Teeth, and Visitors to the Clinics will be Requested to Fill Roots on the First Day in Any Manner they Consider Advisable. On the Second Day the Root Fillings thus made will be Exposed to View.
16. Dr. E. H. Angle, St. Louis, Mo. Regulating Appliances and Their Adjustment.
17. Dr. J. Austin Dunn, Chicago. Guides to the Entrance of Root-Canals in the Bicuspids and Molars in Different Cases.
18. Dr. W. E. Griswold, Denver, Col. New Means for Support for Partial Plates, and a Gold Filling Inserted in an Artificial Tooth by Means of Blow Pipe.
19. Dr. R. G. Richter, Milwaukee, Wis. Distal Cavity in Superior Second Bicuspid or First Molar. Using Soft Foil and Matrix, Cohesive Foil Finish.
20. Dr. W. W. Walker, New York, N. Y. The Immediate Separation of Teeth.
21. Dr. Frank Abbott, New York, N. Y. The Opening, Treating and Immediate Filling of Pulpless Teeth.
22. Dr. A. H. Peck, Chicago. A Special Point in Root Filling.
23. Dr. L. W. Lyon, St. Paul, Minn A Satisfactory Amalgam Filling.
24. Dr. C. E. Esterly, Lawrence, Kan. Procelain Crown with Band. A New Method.

25. Dr. C. P. Pruyn, Chicago. Treatment of Alveolar Abscess.

26. Drs. F. B. Noyes and William G. Stearns, Chicago. Microscopical Exhibit.

MONDAY AFTERNOON, February 1, at 2:30 o'clock, in the main lecture-room of the Northwestern University Dental School, corner of Franklin and Madison streets (six squares walk from the Palmer House).

1. Address: "Recent Improvements in Filling Teeth," by Dr. G. V. Black, Jacksonville, Ill.

2. Paper: "Sensitive Dentin," by Dr. G. F. Cheney, St. Johnsbury, Vt.

MONDAY EVENING, February 1, at 8 o'clock, at the same place.

1. Paper: "Heredity," by Dr. T. L. James, Fairfield, Iowa.

2. Paper: "Peculiar Pathological Perceptions," by Dr. J. D. Patterson, Kansas City, Mo.

3. Report: "Three Pathological Cases," by Dr. I. P. Wilson, Burlington, Iowa.

TUESDAY MORNING, February 2, from 9 to till 12 o'clock, at the Chicago College of Dental Surgery, corner of Wood and Harrison streets (from the Palmer House walk one block south to the corner of State and Adams streets, and take Harrison street car which passes the doors of the college building).

27. Dr. J. B. Monfort, Fairfield, Iowa. A Method of Replacing a Broken Facing on a Bridge or Richmond Crown

28. Dr. Charles W. Jones, St. Paul, Minn. Cataphoresis.

29. Dr. T. W. Brophy, Chicago. Exhibition of Surgical Cases, and Surgical Clinic.

30. Dr. J. E. Cravens, Indianapolis, Ind. Treatment of Pyorrhea Alveolaris.

31. Dr. A. O. Hunt, Chicago. Practical Exhibition of Facial Restoration by Artificial Dentures.

32. Dr. M. L. Hanaford, Rockford, Ill. A Proximal Gold Filling in an Incisor, Using Semi- and Cohesive Gold, and Working from Under Surface.

33. Dr. W. V-B. Ames, Chicago. The Combination of Precipitated Gold and Oxyphosphates.

34. Dr. C. R. Baker, Davenport, Ia. The Articulation of Crowns and Bridges.

35. Dr. J. Y. Crawford, Nashville, Tenn. Gold Filling Demonstrating the Use of Non-cohesive Gold.

36. Dr. W. W. Moorehead, Aledo, Ill. Anesthetizing of Pulp for Immediate Removal by Cataphoresis.

37. Dr. C. S. Case, Chicago. Obturators and Regulating Appliances.

38. Dr. K. B. Davis, Springfield, Ill. Proximal Gold Filling in Bicuspid Using Harris' Mallet.

39. Dr. J. G. Reid, Chicago. Root Filling.

40. Dr. G. D. Sitherwood, Bloomington, Ill. A Suitable Equipment for Making Any Kind of Crown or Bridge with Practical Demonstration.

41. Dr. C. N. Johnson, Chicago. Contour Gold Filling in Upper Molar.

42. Dr. R. H. Kimball, Chicago. Gold Filling.

43. Dr. H. T. Smith, Cincinnati, O. Proximal Filling with Plastic Gold.

44. Dr. B. D. Wikoff, Chicago. *a.* Porcelain-faced Crowns, Showing Successive Steps on Models. *b.* Exhibition of Root Fillings made February 1.

45. Dr. P. H. Morrison, St. Louis, Mo. Amalgam Filling. Platina-gold Lining.

46. Dr. S. F. Duncan, Joliet, Ill. A Method of Attaching Bridges to Anterior Teeth Without Amputation of Natural Crowns.

47. Dr. C. A. Southwell, Milwaukee, Wis. Mesio-occlusal Gold Filling. Electric Plugger. Rowan's Gold.

48. Dr. F. F. Fletcher, St. Louis, Mo. A Method of Using Porcelain Teeth in Bridges Without Tipping Grinding Surface.

49. Dr. Henry Barnes, Cleveland, O., and Dr. L. P. Bethel, Kent, O.

Cataphoric Use of Silver Nitrate in the Treatment of Chronic Alveolar Abscess.

50. Dr. J. Prendergast. Microscopical Exhibit.

51. Dr. J. H. Woolley, Chicago. Hot Air a Failure in Desiccating Root-Canals Prior to Filling. With a demonstration.

EXHIBITS.

1. By Dr. S. B. Brown, Fort Wayne, Ind. A metallic oxid known as "Enamel Restorer." For restoring polished surface on the natural teeth, where the enamel is defective, grind out the superficial defects, smooth the surface with Arkansas stone, then use the enamel restorer, with water and Moose-hide point. Ground surfaces on artificial teeth are polished in the same manner.

2. By Dr. W. G. Clark, Cedar Rapids, Iowa. Removable Porcelain Bridge.

3. By Dr. L. W. Lyon, St. Paul, Minn. Parts of Crowns in Different Stages of Construction.

4. By Dr. T. G. Wonderly, Galena, Ill. Sectional Impression Cups.

5. Dr. G. W. Schwartz, Chicago. Full Upper Porcelain Bridge.

6. Dr. G. V. Black, Jacksonville, Ill. Office Conveniences.

7. Dr. C. N. Trompen, Chicago. Appliance for Holding Back the Rubber-Dam at the Angle of the Mouth During Operations.

8. Dr. T. D. Shumway, Plymouth, Mass. Gold and Tin Combination Gold Filling, Showing Method of Union of the Two Metals.

Tuesday, February 2, at 12 o'clock, noon, in the lecture-room of the Chicago College of Dental Surgery.

1. Paper: "A Basis for a Code of Honor Among Dentists Everywhere." By Dr. W. G. A. Bonwill, Philadelphia, Pa.

Tuesday evening, February 2, at 6:30 o'clock. Annual dinner in the banquet-room of the Palmer House.

LIST OF LATEST DENTAL PATENTS.

572,310. Charles O. Perkins, Petaluma, Cal. Handpiece for Dental Engines.
573,133. Arthur W. Browne, Prince's Bay, N. Y. Dental Chair.
573,361. George W. Schwartz and B. J. Cigrand, Chicago. Dental Furnace.
574,025. Harry A. Edgecomb, Mechanic Falls, Me. Dental Plugger or Mallet.
574,031. George E. Hakins, Norwood, N. Y. Dental Disk-Holder.
574,033. Merrill W. Hollingsworth, Philadelphia, Pa. Appliance for Bleaching Teeth.
574,012. Joseph M. Strout, Portland, Me. Dental Matrix Carrier and Retainer.
574,763. Flavel A. Rudolph, Carmi, Ill. Dental Tool.
574,877. F. W. Blomiley, Sioux Falls, S.D. Adjustable Dental Mouth-Mirror.
575,108. William H. Duddy, Boston, Mass. Dental Napkin Clamp.
575,629. John C. Blair, Louisville, Ky. Fountain Spittoon.
575,610. Philip S. Malcolm, Portland, Ore. Tooth-Powder Receptacle.
575,407. Louis Wirsching, New York City. Veterinary Dental File-Carrier.

News Summary.

The Cause of Warts.—Mechanical irritation of the papillæ is thought by Schaal (*Archiv fur Derm. u. Syph.*, Bd. xxxv., H. 2) to be the cause of warty growths. In his own person, spiculæ of glass seemed to lead to increased formation of epidermic cells and the development of warts. The exposed surfaces being those on which warts habitually develop would lend weight to this theory. The delicate tissues of childhood also favor easy penetration of foreign bodies.

Dr. S. B. Brown, the oldest practicing dentist in Fort Wayne, Ind., died January 5, 1897, of heart trouble, from which he had suffered for some time.

Brown Cement, Suitable for Microscopic Work.—The *Chemist and Druggist* recommends either a thick solution of shellac in vegetable naphtha, or of gutta-percha in chloroform or bisulphide of carbon.

An Exception.—In an examination of sanitary inspectors one candidate answered the question relating to the willful exposure of a person suffering from an infectious disease: "He must not ride in any public conveyance, excepting a hearse, without first informing the driver."—*The Medical Times and Hospital Gazette.*

The Sanitarian gives the following mortality figures:

Deaths caused by	1885-1889.	1890-1895.
Small-pox	1,271	655
Scarlet fever	1,225	946
Measles	6,761	5,192
Diphtheria	8,383	7,588
Typhoid fever	5,903	3,493

To Reflect Light.—To assist in reflecting light upon operations in the mouth on dark days, paint the dam around and between the teeth to be operated upon, or any surface which will act as a reflector, with Japanese wing or enamel white. Moisten the paint with 50 per cent alcohol, giving the rubber one or more coats, as the case requires. The paint comes in small tablets and is clean, pure white and odorless. Try it once and see the advantage.—*J. R. Bell.*

Obituary.

WILLIAM NEWTON MORRISON, D.D.S.

A special meeting of the St. Louis Dental Society was held on December 22, 1896. President F. F. Fletcher opened the meeting with the following remarks:

"Members of the St. Louis Dental Society—It was with heavy hearts that your officers sent you notice to meet here in special session this evening. As lightning from a clear sky came the news to us yesterday morning that one of our oldest, most respected and esteemed members lay cold in death. A man who but one short week ago sat in his place in the councils of this body and took part in the deliberations, and whom we had every reason to hope and expect would meet with us for years and aid us with his counsel and advice. A man known and respected wherever dentistry is practiced. He was a careful student, a ripe scholar and an inventor of much ability. Few men in our profession have been more progressive or lived to see their experimental work in untried fields adopted and approved by all. He was a pioneer in crown-work, bridge-work and implantation, and they stand to-day his most lasting monument. But he is gone. The last page of his life is before us.

"My friends, in the death of William N. Morrison the dental world loses one of its pioneer and brightest stars. This society has lost one of its ablest men and most stanch supporters. Every member has lost a friend whose place will not easily be filled. May no uncharitable word be spoken, but as we say peace to his ashes may his memory ever be kept green by the greatness of his achievements."

Appropriate remarks were made by Drs. H. J. McKellops, G. A. Bowman, J. H. Kennerly and William Conrad.

The following committee—Drs. H. J. McKellops, John G. Harper and A. H. Fuller—was appointed to prepare a biographical sketch of Dr. Morrison, and the committee on January 5 presented this report.

BIOGRAPHICAL.

William Newton Morrison, D.D.S., born in East Springfield, Ohio, May 25, 1842; died in Hot Springs, Ark., December 20, 1896.

He was one of thirteen children of John R. Morrison. Those surviving are James B., Mrs. Lane, of Kansas City, Mo., and Mrs. Cook, Mendota, Ill.

Dr. Morrison's early education was but meager, obtained in the common schools. He worked in his father's saw-mill while at home, but left in 1858 and came to St. Louis to become a student of his brother, James B., the inventor of the Morrrison dental engine and chair.

He arrived at his brother's office penniless, having spent his last money to have his boots blackened and his clothes brushed, so as to make a presentable appearance. The brothers kept bachelor's hall in the same building occupied as an office.

James B. went to Europe in 1862 and William then took charge of Dr. H. J. McKellops' office, who also left the city about that time.

In 1864 he graduated from the Ohio Dental College.

In 1868 he and Miss Cornelia Holme, of Hannibal, Mo., were married; two sons were added to the family, Peter Holme and William N.; the former is married and has a son two years old.

The doctor was so successful in his early practice as to be able in 1872 to build at 1401 Washington avenue a house which combines a dwelling and a dental office, each complete for the purpose intended, the plans being made by the doctor and published with illustrations in the *Missouri Dental Journal*.

Dr. Morrison belonged to a family of dentists, having an uncle, two brothers and two cousins who followed that profession.

As a dentist Dr. Morrison kept abreast of the profession and was one of the first to use the mallet and to construct gold crowns.

He was one of the first to revive the "planting" of teeth, as he called it, his first cases being reported in 1874. The last report was made at the last meeting of the St. Louis Dental Society he attended, on December 1, 1896.

He was fond of visiting the offices of dentists, and when in a town or city made it a rule to call on the members of the profession there located, to learn what he could and cheerfully give to others ideas which he thought might interest or benefit them. He always took pleasure in entertaining dentists of the city and those from abroad.

Dr. Morrison was a constant attendant of dental societies and belonged to the American, Southern, Mississippi Valley, Illinois, Missouri and St. Louis, frequently writing papers, giving clinics and joining in the discussions, also holding office in those of which he was an active member, having been president of the Missouri and St. Louis—twice of the latter. He took an active part in the Missouri Dental College, filling the chair of mechanical dentistry, also acted as demonstrator and gave clinics every session when in the city.

Dr. Morrison traveled extensively for a dentist. July, 1878, he started on a trip around the world which consumed about a year. While on this trip he learned all he could regarding the status of the profession in the countries visited, bringing home with him specimens of work found while abroad. He also made a large collection of photographs of places visited; these he frequently exhibited publicly in the aid of charity. In 1890 he took a trip to Germany for his health; again in 1894, accompanied by his wife, he made a trip to Europe. He had been in the West Indies and also traveled extensively in this country.

Dr. Morrison was a writer for our journals and many of his articles and items are to be found in the *Missouri Dental Journal* and its successor, the *Archives of Dentistry*, both of which he aided in more ways than one. He was one of the editors of the department of Mechanical Dentistry of the former for four years.

He became a Mason in 1865. He was brought up a Methodist, but, after marrying, joined the Presbyterian Church, belonging to the Second.

Dr. Morrison was a public-spirited citizen and did his share for the public good. He, at his own expense, placed numbers of the streets on Washington avenue from Jefferson avenue to King's highway.

Dr. Morrison was as well known and esteemed in this country and abroad as any dentist in our city. He was the inventor of the Morrison dental bracket, which was one of the first put on the market.

Dr. Morrison made friends wherever he went and none ever heard him say aught against anyone.

His success was gained by hard, faithful work, and he was ever ready to lend a helping hand to his fellow man.

H. J. McKellops,
John G. Harper, } Committee.
A. H. Fuller.

DR. JAMES A. SWASEY.

We are called upon to mourn the death of one whose face will no longer be seen in our midst—Dr. James Atwood Swasey, for many years an active member of this society.

This sad event occurred early in the morning of December 24, 1896, at his residence, 3017 Michigan avenue, Chicago.

Dr. Swasey had been in his usual good health up to about the middle of November, when he first noticed that he was suddenly breaking, and he went to West Baden Springs for a few days; but not finding the desired relief he returned to his summer home in Michigan, and from thence came to Chicago, where he died surrounded by his family and friends.

Dr. Swasey was the president of this society when the twenty-fifth anniversary was celebrated in 1889. He was president of the Odontological Society of Chicago in 1894-5, a member of the Illinois State Dental Society, the American Dental Association, and a member of the first International Dental Congress, Paris, France, 1889. He was also the first president of the Chicago College of Dental Surgery, and was reelected for several years. He was an honorary member of several dental societies, state and local, in the United States.

The society loses one of its best representatives in the death of Dr. Swasey. He was a man of strong character, high minded and generous, with a pleasing manner, modest in his estimate of his own acquirements, and ever ready to counsel and assist others. He was a firm friend and strong partisan, energetic and industrious, an inventor of many useful appliances, and devoted to his profession to the last. We shall miss his familiar face and hearty grasp of the hand in all of our subsequent sessions.

We mourn with his family in this their hour of affliction and extend our sympathies.

We place these lines of respect to his memory in our journal records with the thought that his life had been useful to the community where he had resided for so many years, and with the ever-present hope and belief in the immortality of his spirit forever and forever.

Be it resolved, that a copy of this tribute be sent to his family and to the dental journals for publication.

A. W. Harlan,
Truman W. Brophy,
F. H. Gardiner,
Committee of Chicago Dental Society.

The Dental Digest.

Vol. III. CHICAGO, FEBRUARY, 1897. No. 2.

Original Contributions.

RECENT IMPROVEMENTS IN FILLING TEETH.

BY G. V. BLACK, D.D.S., JACKSONVILLE, ILL. READ AT THE ANNUAL CLINIC OF THE CHICAGO DENTAL SOCIETY, FEBRUARY 1 AND 2, 1897.

Gentlemen: We are gathered here to-day to celebrate the thirty-third anniversary of the Chicago Dental Society in a great clinic. Many of you have left your homes and your practice to be with us and assist us by your presence and also to enter into the clinical work. To you, brethren from beyond the limits of the city, Chicago extends the hand of good-fellowship and a most heartfelt greeting. We have greatly desired your presence, and while we shall enjoy your sojourn with us we will be but too glad to know that you may have pleasure in friendships renewed and new acquaintances formed. We wish you to see what we are doing in our offices—what we are accomplishing and how, and to receive your friendly criticism and advice. We wish you to see what we are doing in our several dental schools, what and how we are teaching, and to learn from your counsel how to mend our ways of work for the future; hoping meanwhile that you will also find in your review of these matters much that will be of interest to you, and when you part from us to return to your homes it will be with the feeling that it has been good for you to have been here. We have also wished to see you socially, to meet you as men, to shake your hand and spend the hours of leisure in social chat. From every side we bid you welcome.

The immediate and ostensible object of our coming together is the clinic, and it is with the clinic especially that I am expected to deal in what I shall say to you to-day. Much might possibly be said as to the general management of clinics for the development of the greatest amount of good, but I shall pass over that and confine myself for the most part to the more recent developments in filling teeth.

Possibly if each man here were asked to state what he regarded as the most important recent development in filling teeth we should receive many and varied answers. These answers would be divisible into two great classes that would reflect in a degree the peculiar mental bent of those giving them. The one class would represent the mechanical technique of filling operations, while the other would represent the mental grasp of the principles of the application of this technique. Can we justly divide these—the technique and the principles of the application of the technique? Can we give the one precedence over the other? Certainly not, and yet the constitution of human minds is such that one man is more strongly impressed and thus drawn to the one, while another is more strongly impressed with and drawn to the consideration of the other. It is especially fitting that these two classes of minds should rub against each other in a clinic like this. By so doing each will be influenced to better effort and a higher appreciation of the justly intimate blending of the two that is required for gaining the highest results in dental operations.

Filling teeth has grown to its present high state of utility by a very gradual accretion of thought upon thought in basic principles and the steady march forward of manipulative technique for the realization of each accretion of thought. As it has thus advanced in the past so will it steadily advance in the future—a little being added here, a little there—each little that experience proves to be good being cemented into its proper position in the sum of the best procedures of the time.

Most that I shall say to-day will relate to recent advance in what may be termed basic principles of the application of technique. To many of you I may not be able to offer anything that is new. Indeed, it is my intention to discuss rather that which has been known some time, but has not been known long enough for a full realization of its true bearing upon the every-day operations in filling teeth. It often happens that important principles may be known to the individual in a kind of semi-conscious way without leaving their impress upon his operations, and for this reason discussion of them time and again is necessary to their thorough diffusion through the profession at large, and especially for the apprehension of their just importance as working principles. I will call your attention to the anatomical relations of the teeth to each other and to the immediately surrounding soft parts; to the physical characters of the teeth themselves and their ability to withstand stress; to the nature of caries and to its causation, a subject upon which demonstrated knowledge has very recently been gained, and try to point out the relation of these to every-day procedures in filling teeth.

The teeth as they stand in the mouth in normal position form an unbroken arch by their proximate surfaces resting against each other; now it is to the nature of this contact of tooth against tooth in its relation to the soft tissues that I wish to first direct your attention—not as a new point, for I and others have discussed it before—but rather to point out anew and for further discussion its intrinsic relation to technical procedures for the arrest of caries and the protection of the related soft parts. In the well-formed dental arch this contact of the teeth one with another is similar to the contact of two marbles when brought together. So long as they have not been flattened by wear, the points of contact are very small and easily slide more or less upon each other with the motion of the teeth in their sockets. Immediately to the gingival of this contact the surfaces of the teeth begin to stand apart and the space increases until the alveolar process is reached, forming a V-shaped space between the tooth surfaces, which in normal conditions is filled with the soft gum-tissues. This is the interproximate space. This interproximate space also rounds out broadly toward both the buccal and the lingual. These I shall call the buccal and lingual *embrasures* of the interproximate space. Nature's object and evident intention in the particular form of this space is cleanliness of these surfaces of the teeth. In the chewing of food hard, brittle substances are perfectly deflected from these interproximate spaces by the forms of the surfaces guarding it, and it is only when tough, stringy foods are in process of mastication that anything passes the interproximate contact into the interproximate space. Even then such food does not remain between the contact points, because the marble-like form of this contact causes it to slip away in one direction or the other. It will either slip onward or slip fully into the interproximate space and rest upon the septum of gum-tissue. Suppose it slips into the interproximate space and hangs between the teeth. *Now it is especially this condition to which I wish to direct your attention. It is the design of the Cre-*

ator that this event should be prevented or reflected almost immediately after the occurrence, and it should be the design of the dentist in every operation upon the approximate surfaces of teeth. If we go into the study of comparative dental anatomy on this point we will find that such animals as live much upon grain and brittle foods have broad interproximate contacts, while the carnivora that live upon flesh have exceedingly narrow, even pointed contacts, that round suddenly and very freely to the buccal and lingual. The contacts are broad and flat in the horse, while buccal and lingual embrasures are broad and shallow and the contacts very narrow in the dog, thus illustrating the evidence of design.

Now, gentlemen, I commend to you another point in relation to this matter of the interproximate contact and ask of you that you take it home with you and study it at your chair while making your operations, and this is the influence of the *excursions of food over the surfaces of the teeth and gums during the act of mastication.* If you do this you will find the natural forms of the teeth of young people, before the contacts are much worn, are such that the food is directed into the lingual and buccal embrasures of the interproximate spaces and is made to drag against the declivities of the gum-septum. *In this act any stringy material that has lodged in the space is caught by food material thus dragging past and carried out of the interproximate space.* This is nature's plan of keeping these spaces clean, a plan that is fairly successful in young people before the contact points become flattened by wear.

What is the result if these forms and arrangements fail in the performance of their function? Simply that food is forced into and lodged in the interproximate space. The arch-form of the gum-septum is destroyed by the pressure of the lodged material and a pocket is formed between the teeth in which food habitually lodges and lies to be decomposed by the microorganisms of the mouth. One of two results will certainly follow sooner or later. These surfaces of the teeth will become carious, or disease of the gum-tissue slowly extending to the peridental membrane will occur, threatening the usefulness of the teeth from loosening in their sockets.

Now, what will happen if fillings in carious proximate surfaces be made without attention to these points? What has happened in past time? Review our literature and note expression after expression of the difficulties met with from recurrence of caries after filling proximate surfaces. Our literature is literally filled with these expressions and especially as affecting the proximate surfaces of the bicuspids and molars. Why has this difficulty so persistently followed the flattening of these surfaces with the file, when it has been used to gain room for filling? I answer, because of the unnatural and unhealthful forms given to the proximate surfaces. Why has this difficulty of recurrence of caries so persistently followed the so-called contouring of the teeth with cohesive gold? Again I answer, because of a lack of appreciation of the appropriate and healthful form of the contact and of the interproximate space.

This leads me almost to the point of using unusual intensives in my expression of desire to see a better appreciation of this point. I am tempted to say that the *contouring of teeth is an ignis-fatuus* that leads to the mire. *We should contour the interproximate space.* What matter if the tooth-form is not perfectly restored? The tooth-form should be held secondary to the contouring of the interproximate space. The guarding of this space is the first consideration. The form of the tooth or even its full occlusion is of less importance; though not to be neglected, it should be held as secondary. The health of the tooth and its surrounding tissues is the first consideration from any point of view that may be taken, and to this end the contour of the contact and the space comes first—form and occlusion is the important afterconsideration. So long as food wedges between the teeth, causing pain, mastication is ineffective. The patient goes lame at the table, to say nothing of disease to follow. I have been impelled to speak more at length and more strongly on this point since seeing the program of this great clinic—intended to be one of the greatest of the world. While a number propose to illustrate the contouring of teeth, not one has proposed to illustrate the contouring of the interproximate space. Hence my desire to press the point. Not as a new thing, but as a comparatively recent development of basic principle that should impress and give character and additional usefulness to each man's operations. It will not do to claim that the proper contouring of the tooth includes the contouring of the space. That is the wrong standpoint from which to view the matter. Dentists have gone on from decade to decade contouring teeth and failing to properly contour the interproximate space. I beg of you to view this matter from the vantage ground of the best defense against recurrence of caries and against disease of the soft tissues.

In my practice I no longer hesitate to remove the otherwise most perfect filling if I find it failing to protect the interproximate space, provided of course I cannot cure the fault without removal, no matter whether I have made the filling or one of my fellow-practitioners has made it. I cure this trouble at all hazards, and let me say that there is no operation that I undertake for which I have more grateful expressions of appreciation from patients. Yes, I go still farther—when flattening of the contacts from wear occurs in middle-aged people and they begin to have trouble from lodgments of food, I do not hesitate to cut cavities in perfectly sound teeth and fill. In this operation I avert a threatened danger of serious character while removing a present inconvenience to the patient.

RELATION OF OPERATIONS UPON PROXIMATE SURFACES TO THE ACTIVE CAUSES OF CARIES.

In all filling operations upon proximate surfaces the operator should have a broad mental grasp of the nature of the active cause of caries and its mode of aggressive attack. Very recently demonstrated knowledge of this has been materially advanced by the work of Dr. J. L. Williams, of London. I met Dr. Williams in New York last month and had the opportunity of a long conference with him, together with an examination of his slides, besides hearing his paper before the Odontological Society and seeing his photomicrographs projected upon the screen. In reference to caries of enamel, and especially as to the methods of attack in the first inception of the carious process, Dr. Williams has furnished evidence of the most trustworthy and positive character, which adds very materially to demonstrated knowledge. While this knowledge proves not to be very different from what I and others have been teaching for a number of years, it is a demonstration of truth so clear and unmistakable as to constitute new knowledge of the subject of the most important character.

As far back as 1838 Robertson pointed out that caries must be caused by acids produced by decomposition at the immediate point where caries occurs. But Robertson could not explain how these acids were formed. He could only point out that they were certainly formed from noting that their effects were confined to a small portion of tooth-surface in positions favoring lodgments and decompositions. It required half a century of study and experimental research before the formation of acids as a product of decompositions by germs was rendered fairly clear by Pasteur. Finally, in 1882–4

Dr. Miller, of Berlin, determined the classes of microorganisms producing caries of the teeth, the character of fermentation produced by them, and the particular acid which they formed. The action of this acid upon tooth-structure was also determined very accurately and the relation of microorganisms to its production within the dentin clearly shown. But the question as to how the first attacks upon the surface of firm sound enamel were made was still waiting for clear definite demonstration.

Dr. Miller has been non-committal in this point. I have been more definite in statement in some lectures before the Illinois Dental Society, in which cultures for demonstration were made, and to my classes, but have always fallen short of actual demonstration that would give the weight and influence actual certainty. I have shown that under some conditions microorganisms formed into a film or layer agglutinated together upon the surfaces of the teeth in secluded or partially secluded positions, and formed their acid products in immediate contact with the enamel, where it was definitely protected from being washed away by the saliva and thus left free to exert its decalcifying power on that tissue. I have shown the formation of this agglutinating substance in artificial cultures, as many here today will remember.

Now Dr. Williams has found the means of showing all of this as it occurs under natural conditions in the human mouth, together with the immediate effects upon the enamel. By the use of certain hardening fluids he has devised, this film of microorganisms in the gelatinous matrix formed by them has been rendered sufficiently hard to be ground down upon a stone with the enamel to which it clings, forming sections so thin that both the microorganisms and the enamel-rods come clearly into view, together with the immediate effects upon the enamel-tissue. This effect of the acid products of the microorganisms is much like that which has been described by myself from other modes of examination. That is, it is found to consist in the first instance in the solution of the cement substance by which the enamel-rods are held together, and finally the much slower solution of the rods themselves and the gradual breaking up of the tissue.

But Dr. Williams' demonstration shows a power of penetration of the acid products of microorganisms, when covered in by these films upon tooth surfaces, for which I was wholly unprepared. Among his ground specimens there are several showing the penetration of the entire thickness of the enamel and a spreading of the effect well into the dentin without the displacement of a single enamel-prism. An exploring instrument might be passed over the surface of the enamel without the detection of any break in the continuity of the surface, and yet the sections show beyond the possibility of mistake widespread softening of the tissue. The extent of this was the point which particularly arrested my attention. The effect in the enamel was distinctly the solution of the cement substance between the rods, causing these rods to stand distinctly apart. In some the whole thickness was thus affected before any rods fell away, and in others the surface ends of the rods had begun to be broken up before the whole thickness of the enamel had been penetrated. In still others only the outer portion of the enamel had been affected, and over these outer ends of the rods was the film of agglutinated microorganisms covering it all in and effectually preventing the dissipation of the acid formed by saliva currents in the mouth.

It was curious to note how this effect is confined to portions of enamel the surface of which is covered by the film of microorganisms. So constant is this that Dr. Williams is of the opinion that the beginning of caries occurs in no other way. In other words, acid saliva has no influence in causing the beginning of caries. Acids distributed in the saliva have no influence in causing caries. It is solely acids produced beneath these films of microorganisms, and protected from dissipation into the saliva by these films, that are responsible for the beginnings of caries. After a breach is once established and a haven formed for the protection of growths of microorganisms, or after the penetration of the organisms into the tissues of the tooth, the carious process is not only assured but is more rapid. All of that has been sufficiently demonstrated by Dr. Miller and has become well known.

The application of this to the management of proximate surface fillings is now the important consideration. This means cleanliness of surfaces for the purpose of prevention of recurrence of decay. How can this be effected in the highest degree? We have been unable to effect this by means of antiseptic washes or artificial cleaning. The danger line is found to extend to the portions of tooth-surfaces lying well in the buccal and lingual embrasures of the interproximate space, where they fail to be regularly cleaned by the excursions of food during mastication. The portions of the proximate surface replaced by the gold filling are safe from caries, for the reason that the gold is not acted upon, but the cavity-margins constitute a line of danger. Therefore, in the formation of the cavity for filling, cut to the buccal and to the lingual sufficiently to place the line of margin in position to be habitually cleaned by the scrubbing caused by the excursions of food during mastication. This is essentially what I have in a previous paper before the Illinois State Dental Society, and in the articles in the *Cosmos* of 1891, demonstrated *extension for prevention.*

Of course there will be failures from imperfect manipulation and other causes, but the application of these principles carried out by a steady hand trained to a high degree of skill in the present technique of filling operations will give the operator few causes for chagrin in the way of recurrence of caries of the proximate surfaces.

Dr. Williams also brings us important data with reference to the comparative liability of classes of teeth to caries, and to the influence of imperfect formation of enamel upon the liability of teeth to succumb to the carious process. In this study he seems to have recognized, as most others have done, that roughness or irregularities of surfaces, pits, deep grooves and fissures give opportunity for caries by furnishing convenient points of lodgment for microorganisms. But Dr. Williams seems to have been led to the conclusion that beyond this the conditions which determine attacks by caries are something apart from the teeth themselves. The predisposing cause is not found in the teeth but in their environment. It is not in the composition or condition of tooth-structure. On this point Dr. Williams seems to have worked long, earnestly, and very voluminously, and without any knowledge whatever of my own work in that direction. The plans of this work are also entirely different from my own. In this work Dr. Williams has obtained teeth fresh from the mouth, with the history of the patient as to caries or immunity from caries, and has made microscopic examination of the enamel of these teeth to determine the degree of perfection or imperfection of structure. These examinations have given very striking results. In order to appreciate this you should know that Dr. Williams has become remarkably skillful in grinding sections of enamel. So skillful that he seems to be able to reduce it to the thickness of a single layer of enamel-rods and yet preserve the section intact, a skill that has been attained only by long and careful technical study. He has therefore been able to study the structure very minutely. In this mode of study that which he regards as the highest type of perfection of enamel is not found continuously. Indeed, most specimens are found faulty in some particulars. The most persistent imperfection is what Dr. Williams regards as a partial failure of the cement substance which unites the rods together. This is in the quality of the material or in some instances apparently an insufficient amount of it, so that the union of the rods remains in some degree imperfect. This latter produces the white spots often seen in enamel.

In the study of teeth carious and not carious, Dr. Williams seems to have been struck with the fact that the carious teeth were not necessarily those of imperfect enamel. Indeed, after studying some hundreds of cases the conclusion reached is that this factor has no practical relation to the occurrence or non-occurrence of caries. He finds the most perfect enamel will not withstand the attacks of microorganisms once a solid film is formed upon its surface, while the least perfect is not attacked without the presence of such protecting film. In support of this he cites instances of complete immunity from caries in which teeth have been lost from disease of the peridental membrane from the age of 36 to about 60, in which the enamel of the teeth proved to be of very inferior quality. In following out this subject the teeth of many animals never known to suffer from caries have been examined and the enamel has been found generally less perfect than the enamel of the teeth of man.

After this exhaustive study of the conditions of the occurrence of caries, a study occupying more than ten years of continuous research, Dr. Williams arrives at a conclusion which seems to be the same in effect as my own conclusions, obtained by totally different methods, and published in the *Cosmos* in 1895. These conclusions have been found by each independently and each without a knowledge of the work of the other. Dr. Williams and myself had held no conference nor seen each other for eleven years until I met him in New York.

These conclusions are substantially:—That the structure of the teeth is not a factor in their liability to caries, further than that pits, grooves, fissures and roughness of surfaces give opportunity by inviting lodgment and facilitating the growth of microorganisms at particular points; that the predisposition to caries is to be found in the environment of the teeth; that this predisposition is some condition of the secretions or fluids of the mouth which renders the active cause of caries (microorganisms) effective in its production.

The question of hard teeth and soft teeth has been found to have no relation whatever to the occurrence of caries. The hardest teeth and those with the most perfect enamel seem as likely to become carious as those less dense and less perfect in the structure of the enamel.

These conclusions have no reference to whether or not teeth with imperfect enamel or of least dense structure will decay more rapidly when the predisposition to caries is present, but it has been noted particularly that teeth with the most perfect enamel and of the densest structure decay very rapidly when the predisposition to caries has rendered the exciting cause active.

In all of those cases in which the teeth seem to have improved in quality or depreciated in quality, the change of condition has not been in the teeth themselves, but a change has occurred in their environment—in the secretions and fluids—which has affected the active agents producing caries; in the one case tending to immunity and in the other increasing its activity.

The particular conditions of the secretions constituting a predisposition to caries or inducing immunity from caries are as yet unknown.

These considerations and conclusions are of the utmost importance in filling operations. We have the assurance that however soft teeth may appear to cutting instruments, they have sufficient strength for any reasonable filling operations. Whenever the predisposition to caries is found to be strong this fact calls for the exercise of the utmost diligence and care in planning the defense of the teeth, and especially of laying out the lines of the enamel margins of cavities in such positions that they will be well cleaned by the excursions of food over them during mastication. For this purpose the buccal and lingual enamel margins of proximate surfaces should be carried well out from the contact point and the form of the occlusal surface so shaped as to direct the excursions of food well into the buccal and lingual embrasures of the interproximate space to facilitate the continuous cleaning of these margins. Such portions of the enamel margins of proximate surfaces as cannot be so laid as to receive this natural cleaning, as the gingival margins, should be so placed as to be protected by the free margins of the gums. The fact that caries does not begin upon the portions of the necks of the teeth covered by the healthy free margin of the gum seems to me to be well established by observation; but it does begin in such position in some of the pathological conditions of the gum-margin, and is often found to make its beginnings close against the gingival line when the proper guards of the interproximate space have been destroyed either by extraordinary wear or by mutilation at the hands of the dentist. The reasons calling for this especial care are—first, all portions of proximate surfaces lying within the interproximate spaces are in especial danger when the predisposition to caries is strong. This danger area includes the breadth not cleaned by the excursions of food. If this danger area is cut away at once and protected by the filling the opportunity for recurrence is removed. Second, with the best technique of our time the margins of fillings must still be regarded as danger lines, and in all cases of unusual or even ordinary intensity of predisposition to caries should be so laid as to receive the best possible cleaning by the excursions of food during mastication. The opportunity for the growth of films of microorganisms upon the lines of the enamel margins should be reduced to the lowest possible point. In laying these plans it must not be overlooked that the seating of the filling must be sufficiently broad and flat that the filling may easily bear the great stress that may come upon it. No fear need be felt for the strength of the tissue of the tooth, for whether gold or amalgam be chosen as the filling material, the tooth structure will not be first to yield to stress. When these points are skillfully observed and the mechanical technique is carried out with a careful hand well skilled in the art as known to-day, not many cases will return to chagrin the operator.

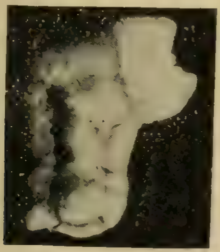
Further, intensity of predisposition to caries is not constant. This condition is most likely to occur in youth, and when treated with vigorous care will materially abate in 95 per cent of cases, while not a few become wholly immune. Some of those who have been my patients for twenty or twenty-five years, who in their youth presented intense predisposition to caries, have become immune later and have presented but slight relapses. Among those who have remained under my observation caries has not remained continuously active in a dozen cases. These facts should give courage in the struggle with these ugly cases; should call out our best effort; should bring into play the highest form of mechanical technique with the best of material—so far as may be at all practicable it should be gold and gold only. What we may be able to do with improved amalgams in the future remains for test of trial. My experience with amalgam in the past condemns it in all cases when the predisposition to caries is intense, and generally for young people. In the few cavities occurring in cases of low intensity of the predisposition to caries any tyro may succeed. It is the bad cases that call for wise planning and skillful technique.

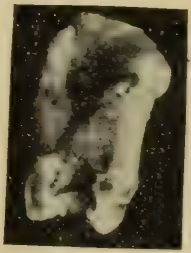
And now, gentlemen, I place these matters before you for your consideration and discussion, hoping that you will speak your mind without reserve or hesitation, remembering only that you are speaking for the benefit of humanity—that you are speaking to the end that dentists may serve suffering mankind with more zeal, greater wisdom and improved technique.

A CURIOUS MALFORMED MOLAR.

By J. M. Sprinkle, D.D.S., Nokomis, Ill.

Thinking that it might interest the readers of the Digest, I send the history of a curious malformation which occurred in my practice some months ago.





Mrs. W., 60 years of age, a resident of this place, came to me suffering with the toothache. While the pain could not be definitely located, manifesting itself in the left side of her face, a left upper second molar was thought to be the cause of the trouble. As it was the only tooth in the upper jaw, and somewhat decayed, I thought it best to extract. The tooth was in its proper position and gave no evidence of being irrregular in any way, but when it was extracted, which was accomplished only after the removal of a small portion of the alveolar arch, the third molar was found to be firmly attached to the buccal roots of the second molar, leaving the lingual root free.

SOME POINTS ABOUT ARTIFICIAL PALATES.

By Oscar Boort, D.D.S., Tabor, Iowa.

In the construction of artificial palates it should always be borne in mind that the levator palati muscles are fully developed and in active operation. The cleft is the result of arrested development of the naso-pharyngeal valve and the palate bones, more or less extensive. Movement of the levator muscles takes place in the act of deglutition and articulation, the same as in the normal velum. At every nasal tone the levators drop, and with every attempt at throat or chest tones they rise, as though never weary of performing a useless task. Every successful effort to correct the defect with a mechanical appliance must comprehend these facts, and be so constructed that the levator muscles can take hold of and move it when they move.

With this clearly in mind it will at once be seen that a substance like elastic rubber will in nowise answer the requirements in an artificial velum; instead of being moved up and down its edges curl up and the levators have no control over it; besides, elastic rubber in the mouth soon deteriorates and becomes filthy. Whatever the substance used in artificial vela it should be hard and capable of taking a high polish. The velum must be light and so formed as to lie between and over the levator palati muscles, and so attached to the supporting plate that it will swing freely from its posterior border, and be constrained by a delicate spring in such a manner as to easily yield to the muscular action and be returned to its normal position when the muscles are at rest.

In gold alone, or in gold and hard rubber combined, may be found the proper materials for such work. To make the velum sufficiently light, whether of hard rubber or gold, it must be made hollow. Usually a congenital cleft is not less extensive than an entire bifurcation of the soft palate, but occasionally the cleft does not reach the border of the palate bones. In such a case it will be necessary to use the lance and carry the bifurcation forward in the median line to the posterior border of the palate bones, in order to make room for the appliance.

Congenital clefts are uniform in character and vary only in extent, but accidental lesions of the palate are irregular in character and must be treated accordingly. When disease, such as syphilis, has destroyed the velum and left the levator muscles untouched, no matter how extensive its ravages in other parts, speech may be restored the same as in congenital cleft, with the advantage that the restoration will be complete and perfect at once, while in the congenital cleft practice alone will lead to perfection. The artificial velum, in a case of syphilitic cleft, should always be made of a non-corrosive metal like gold or platinum, since rubber is liable to irritate the parts by keeping them unnaturally heated.

If the levator muscles are destroyed of course no movable velum can be supplied; yet great benefit to speech will be obtained by extending the plate back just far enough that in the act of deglutition the superior constrictor of the pharynx will meet and touch it.

A SIMPLE REGULATING APPLIANCE.

By Geo. M. Cameron, D.D.S., Chicago.

The average regulating appliance as offered in our journals is no doubt the result of much patient labor and experiment, and in the hands of the inventor or a skilled crown and bridge worker, with a complete laboratory, is his ideal. But as there are others who are not prepared for that class of work and probably are not familiar with this serviceable "old timer," I will, to explain it fully, give a case in practice.

A girl, aged 13, presented with the superior incisors close inside the inferior. I took full upper impression in modeling compound, trimmed out or enlarged molars and bicuspids, filled and separated. Waxed up model, extending over molars and bicuspids and to cutting edge of incisors, building up level with latter and extending back at same level for one-quarter of an inch. Placed wax in mouth and had patient bite, leaving room for incisors to clear; removed wax, put on hooded flask vulcanizer and finished. Then drilled seats or openings, one for each tooth, to be moved in plate as near center of point of contact as possible, being careful to have seat deeper than its diameter. From a large piece of Sea Tangle Tent (any druggist can furnish it) made plugs to fit the holes bored and drove in firmly, cutting off close with a wedge-cutter. Then inserted plate and changed plugs every day for five days, making them a trifle longer each time. On sixth day teeth seemed to be moving too rapidly, so put in plugs of orange-wood of length sufficient to hold to position gained and dismissed for three days. At end of that time, the conditions being favorable, continued with the plugs of sea tent for five days more, changing daily as before. Then, having obtained the desired positions, put in orange-wood plugs as before and dismissed for a week; at the expiration of which period removed plate and dismissed patient.

The teeth were not sore at any time and the only inconvenience suffered was occasioned by difficulty in masticating solid food, the grinding surface being limited to the contact between lower molars and plate. The plate can be removed at any time, but I think a thorough cleansing when changing the plugs is sufficient, except during time plugs of hardwood are used, when the patient can remove plate once daily, but only long enough to clean.

In the above case a returning plate was not necessary, and one is seldom required in the class of cases to which this method applies.

FUNCTION OF THE TONSILS.—Dr. Fox thinks their function is connected with the reabsorption of the surplus saliva, and it is suggested that these glands absorb the poison of scarlet fever, diphtheria, etc., from the saliva. The poison of a common tonsilitis has little more than a local effect; that of a scarlatinal tonsilitis is able to reproduce itself in the system indefinitely without deterioration.—*Dominion Journal.*

HONEY BEE SECRETES FORMIC ACID.—A fact which is interesting, and perhaps new to many, is that the honey bee after filling a cell with honey and covering it with the lid, adds to the honey a drop of formic acid. This is done by piercing the lid with the sting and depositing a drop of the poison from her sack. By numerous experiments it has been shown that formic acid added to honey or any sugar solution prevents fermentation. Evidently the sting of the bee has a use besides that of defence.—*Am. Microsc. Jour.*

CHLORID OF SODIUM FOR DECIDUOUS TEETH.—While I was on my vacation this summer in one of the little cities outside of Paris, at the meeting of the French Dental Association, a gentleman presented at least half a dozen children whose baby teeth he had been treating with a saturated solution of nitrate of silver, with this addition: After he had the cavity thoroughly dry he would rub the nitrate of silver in and then fill the cavity with chlorid of sodium, rubbing it in with a wooden burnisher. He had been doing that for fifteen or sixteen years. I asked him why, and he said it formed an insoluble coating over the decayed part of the tooth. Other dentists there had been using the very same method. I speak of it because some of the dentists may try it. I have tried it since my return and shall continue to do so. Dr. Michaels and some other eminent men in France have had great success with it. The salt formed a precipitate, chlorid of silver, which they claimed was insoluble.—*W. W. Walker, in Cosmos.*

Digests.

CONGENITAL TEETH. By Dr. E. S. McKee, Cincinnati. These cases are of very rare occurrence and serve as a curiosity for doctors and students. Some writers claim that no milk teeth will appear to fill the vacancy left by exfoliation. Inheritance is shown in some cases. In the instance of Mattei, the infant's mother had been born with a tooth, and in Limerick's the mother had two congenital teeth, as did also her second child and a child of her sister.

The premature eruption of the teeth is considered to be due to some abnormal development of the bone; probably most cases have some connection with rickets. In some children who cut their teeth young the fontanelles close early, but not so in those cases where the teeth are congenital. The enamel is usually very thin or absent. The etiology of congenital teeth is described by some authors as the premature occurrence of the processes which normally lead to the cutting of the milk teeth. In a few cases it is probably due to a true estropia of the dental follicles and its teeth. Such premature eruptions are usually found in children suffering from improper nutrition or other abnormal systemic conditions.

Treatment. A tooth dangling uselessly and aimlessly in the mouth should unquestionably be removed. Otherwise inaction is preferable. The teeth are sometimes so situated as to prevent closure of the mouth, or to make nursing painful and futile and to endanger the nourishment or life of the child. The danger of hemorrhage is probably magnified by Magitot, who, having lost one child in whom hemorrhage recurred on four separate occasions and proved fatal despite all treatment, lays down the rule never to extract the teeth. If the child is puny and delicate, perhaps syphilitic, hemorrhages are possible.—*Medical Standard*, *January*, *1897*.

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SUCCESS OF THE VIENNA TREATMENT IN EFFECTING THE PASSAGE OF A SET OF FALSE TEETH. By Henry L. Williams, M.D. On returning to the Howard Hospital on the night of July 18, 1896, an officer of the Salvation Army was found waiting in the dispensary in much alarm because he had swallowed his false teeth. The history elicited was as follows:

The patient had been addressing a meeting of the Salvation Army during the evening. At the end of his address he had taken a glass of ice water, thrown back his head and started to drink. With the first swallow he felt the plate which he wore pass back into his throat. He made every effort to dislodge it by coughing and retching, but without result. Becoming frightened, he then ran into the adjoining room, where his wife was in waiting. She was informed of the situation in a word, and immediately pounded him vigorously on the back between the shoulder-blades. Within a few seconds he felt the teeth begin to pass down the esophagus, with a sensation of scraping, followed by a feeling of entire relief. He then went into the office of a physician close at hand, and was given two large pieces of raw apple to swallow in order to render certain the fact that the foreign body had passed into the stomach and was not lodged at any point in the esophagus. These he swallowed without difficulty. He was then referred to this hospital, and came at once.

The plate (upper) was described as containing the two central incisors and the left first molar, and having at each end a small metal "hook" which clasped the base of the adjacent tooth and held it in position. Accurate measurements were subsequently taken from the plate, as follows: The greatest length from tip to tip was 1¾ inches; the greatest width three-fourths of an inch. The hook which partly encircled the base of the left second bicuspid was made of hardened gold, rather slender and delicate, and projected one-quarter of an inch from the plate. The hook upon the right side, also of gold, clasped the base of the right cuspid tooth; this was likewise slender and rather sharp, but projected only one-eighth of an inch.

It was carefully explained to the patient that it was quite likely such a body would not pass the pylorus; that in case it did pass, the danger of its becoming caught at some portion of the intestinal tract and causing obstruction or perforation, with fatal consequences, was very great. The man was strongly advised to remain quietly in the hospital during the night, and await the visit of the surgical chief in the morning. This he declined to do. He also refused to take an emetic which was proposed with the hope that the body which had been swallowed might be ejected and thus all further danger eliminated. He then said that he would go home and just trust in the Lord, and, in case any symptoms developed, would at once return to the hospital. I endeavored to show him that if he neglected any measures that might aid in preserving his safety it would be most foolhardy, and advice was given him to at once drink copiously of lukewarm water and mustard, and to eat only mashed potatoes for the next forty-eight hours.

The patient returned the next afternoon in the best of spirits with the following story: On reaching home a little before midnight he at once took a pint and a half of warm water containing a tablespoonful and a half of Coleman's mustard. This failed to nauseate him in the slightest, but served to put him to sleep almost immediately. At 2 a. m. he awoke and ate a large plate of mashed potatoes which his wife had prepared for him. He then went to sleep at once, and woke next at 9 a. m. and again ate heartily of mashed potatoes. After this he once more slept for an hour and soon after 10 o'clock dressed and lay quietly upon the lounge. Shortly before noon he felt what he described as a "scratching sensation" which he located in the left iliac fossa over the line of the sigmoid flexion of the colon, attended with an impulse to evacuate the bowels. This he did, and obtained simply a normal stool. In about ten minutes he once more felt the call from nature, and this time discharged a large mushy mass, in which the teeth were discovered. In the mass immediately surrounding the plate were found also large pieces of shaved beef, which he had eaten for supper on the previous night, and which, probably, quite as much as the potatoes, had protected and coated over the body in its passage through the intestines.—*Therapeutic Gazette, January, 1897.*

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CATAPHORESIS IN TUBERCULOSIS. By N. H. Williams, M.D., Jackson, Mich. I noticed in a recent number of the *Medical Record* that a committee had been appointed by the Paris Academy of Science to investigate an alleged cure for consumption practiced by Dr. Crotte. The item briefly states that "the method comprises the use of electricity and antiseptics, the electricity being employed to open the way for the parasiticide."

This may or may not be the same idea which I have been working upon in a small way since last June. I use the continuous galvanic current and medicate the positive electrode. Having made the diagnosis and located the diseased area, I place one electrode upon the front and another upon the back of the chest, with the affected portion of lung between them, using electrodes of at least six inches in diameter. Pieces of wire gauze well padded with absorbent cotton make good electrodes for the purpose. Upon the moistened cotton of the positive electrode I sprinkle a solution of iodin and iodid of potassium and use a current of about twenty milliamperes for fifteen minutes. I find that quantity is about all the patient will bear on account of the pain which comes with a stronger current. The treatments have been repeated every second day at first and at longer intervals later.

I have used the treatment in six undoubted cases of consumption, and though the time has been too short to make any positive deductions, I must say I am greatly impressed with the results obtained. Two express themselves as cured, and appear to be. The others are much improved, with the exception of one little patient, who was so frightened that the parents desisted from the treatment. Whether the results are due to cataphoresis, the iodin reaching the diseased tissue and acting as an antiseptic, or to the antiseptic effect of the continuous current, or to both, I do not pretend to say. Further experiment would determine that point.—*Medical Record, January, 1897.*

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COCAIN POISONING, MAGNAN'S SYMPTOM. Rybakoff, at a meeting of the Neurological Society at Moscow, insisted on the diagnostic value of the symptom of chronic cocain poisoning described by Magnan. This is an hallucination of common sensation—the patient complains of feeling some foreign body under the skin. In some cases the foreign bodies felt were like grains of sand, in others slightly larger; generally they were described as more or less rounded, and gave rise to complaints of microbes, worms, crystals, etc., situated just under the skin. While other symptoms of chronic cocain poisoning occur also in alcoholism and with other poisons, Magnan's symptom seems to occur only with cocain. It has therefore a real diagnostic value, especially in cases where the patient is unwilling to admit having used cocain. Where cocain is extensively used in surgery and dentistry, the appearance of Magnan's symptom is a valuable indication for the immediate cessation of the drug. Korsakoff reported a case in which a woman suffering from multiple neuritis complained of "worms in the skin." On inquiry it was found that vaginal tampous containing cocain had been freely used. The omission of these was followed by an amelioration of the symptoms.—*Neurolog. Centralblatt, August, 1896.*

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ORAL SURGERY. By Edmund W. Roughton, B.S., M.D. (Lond.), F.R.C.S. Eng. Diseases of the Lips. Hypertrophy. This affects the upper lip more often than the lower. It is usually due to the irritation of cracks or fissures about the mouth and chronic nasal catarrh in strumous children. In such cases it is often known as *strumous lip*, but it may occur in congenital syphilis. The hypertrophy usually disappears as the general health improves under appropriate constitutional treatment. Sometimes it is necessary to remove a portion of the hypertrophied tissues.

Inflammatory affections. The different ones described under "stomatitis" affect the mucous aspects of the lips in common with the rest of the buccal mucous membrane, and not infrequently overflow to their cutaneous surfaces. Thus superficial ulcers similar to those occurring on the tongue and cheeks are often met with in secondary syphilis, or as the result of dyspepsia. Cracks and fissures at the red margins of the lips may be due to the same causes, or may result from exposure to cold winds, etc. If neglected they may become deep and painful, and prone to bleed when the lip is stretched in laughing, yawning, etc. They are often difficult to cure; in the first instance they should be treated with a simple ointment; if they prove obstinate they should be touched with nitrate of silver. The patient should be advised to avoid opening out the fissure by stretching his lips.

Primary syphilitic sores are not uncommon on the lips. They are caused by innoculation of some crack or excoriation on the lip with the discharge from mucous tubercles in the mouth of an infected person, or by using a drinking vessel immediately after a person with secondary syphilitic disease of the mouth. Either lip may be affected, but the upper is more commonly the site of a chancre than the lower. It is most often seen in young persons, especially females. The sore is usually raised, roughly circular, excoriated upon its surface, and discharging sanious pus, or sometimes having a tendency to scab over. The base of the sore is usually more or less indurated, but the induration is not so marked as in chancres on the genital organs. The lymphatic glands under the jaw very soon become enlarged and indurated, and symptoms of secondary syphilis appear in due course. Primary sores on the lips sometimes simulate epithelioma. A comparison of the description thus given, with that of epithelioma given below, will suffice to show how the differential diagnosis may be made. The treatment is the same as that of syphilis acquired in the usual way.

Carbuncle of the lip is a much more severe affection than carbuncle of other parts. There is considerable doubt whether the disease is really the same. It usually affects the upper lip and begins as a vesicle or pustule surrounded by a red blush and swollen œdematous skin. The swelling rapidly extends, often involving the greater part of one side of the face. Suppuration takes place after a few days, and the skin in the central part becomes dusky, and the subcutaneous tissue breaks down into soft sloughs soaked in pus. The local sore is accompanied by severe fever and signs of septic intoxication. Death may be due to septic absorption, or to infective phlebitis of the facial vein spreading to the intracranial veins and producing meningitis or general pyemia. The disease sometimes closely resembles malignant pustule, but the black slough surrounded by vesicles and the typical bacilli characteristic of the latter disease are not found in facial carbuncle. The treatment consists in making free incisions, scraping away all the sloughs and applying strong antiseptics. The patient's strength must be supported by generous use of stimulants and fluid nourishment.

Lupus vulgaris is very common upon the face, especially the nose and the neighboring part of the cheek. It often affects the lips, especially the upper. It is a form of tuberculosis, its distinctive feature being the formation of nodules of the granulation tissue in the corium. These nodules are soft, brownish-red and translucent, resembling apple jelly. They are at first buried in the skin, appearing as small red papules on the surface. The papules gradually become larger, and the skin between them thickened and reddened by inflammatory infiltration. The patch thus formed may slowly undergo involution, leaving a smooth, firm scar not unlike that of a burn. In the majority of cases, however, ulceration takes place sooner or later, producing a granular sore covered with greenish-black crusts, and surrounded by apple-jelly nodules in various stages of development and disintegration. The disease may extend from the lips to the inside of the mouth, involving the gums, palate and tongue. The lips may become adherent to the gums, and to some extent to each other at the angles of the mouth, thus considerably diminishing its size.

The treatment consists in a complete removal or destruction of the diseased tissue by the application of caustics and the use of Volkmann's spoon.

Tumors. *Cysts* frequently occur on the lips; they are due to distention of mucous follicles. They form small, tense, globular, semi-translucent, bluish pink swellings, containing a glairy fluid. They should be dissected out, as they are apt to refill if they are simply incised.

Nævi are not uncommon. They may be recognized by their characteristic appearance and congenital origin. When small they may be touched with nitric acid or ethylate of sodium; when large and projecting on the mucous aspect of the lip they may be ligatured; when involving the whole thickness of the lip they may be dealt with by electrolysis or excision.

Adenomata occur in the lip as small globular elastic swellings projecting under the mucous membrane or sometimes under the skin. They are composed of glandular tissue resembling that of the glands found in the mucous membrane of the lips; sometimes however they contain nodules of cartilage. They may be easily shelled out through an incision through the mucous membrane.

Papillomata are common on the lip; they sometimes form horn-like projections. They should be extirpated with the knife, as they have a tendency to become epithelimatous.

Epithelioma nearly always affects the lower lip and occurs in men, being most frequently caused by the irritation of a short clay pipe. It begins as a small crack, ulcer or indurated tubercle, which may spread superficially along the margin of the lip or deeply into its substance. Eventually it forms a large mass involving the whole lip and adjoining parts, including even the lower jaw; its surface is ulcerated and has hard, sinuous and everted edges and a widely indurated base. The glands under the jaw become infiltrated, but not as a rule until the disease has lasted some six or nine months. Dissemination through the internal organs is rare. The treatment consists in early and free excision. This is usually best accomplished by a V-shaped incision, the margins of which are subsequently brought together with hair-lip pins and twisted sutures.

The diseased glands in the neck should be removed at the same time. Sometimes it is necessary to remove a portion of the lower jaw as well. The results of the operation are extremely good as compared with those for extirpation of malignant disease inside the mouth. If removed early the disease may be completely and permanently cured. When recurrence does take place it is more often in the glands of the neck than in the scar.

Rodent ulcer occurs in old people, mostly over 50, and is twice as common in men as in women. It begins as a small papule or tubercle usually near the inner canthus of the eye, but occasionally on the lips or chin. After some time, perhaps years, the tubercle becomes a small ulcer with irregular sinuous edges, a depressed, pale pink, glazed surface devoid of granulation but often covered with a scab, and a slightly indurated base. The ulcer slowly spreads, although in places and at times it makes feeble attempts to cicatrize; thus after many years the greater part of the face may be converted into a large and ghastly chasm. The disease is closely allied to epithelioma, but differs from it in that the epithelial growths start from the hair follicles and sebaceous glands instead of from the surface epithelium, and that the epithelial cells are smaller and rounder and not so often or so distinctly grouped into cell nests. It is also much less malignant, its course being slower, and it having no tendency to infiltrate lymphatic glands or to disseminate in the internal organs. It does not recur after complete removal. The treatment consists in freely removing the disease with the knife, and the application of caustics to what cannot be thus removed.

Disease of the cheek.—The chief surgical affections met with in the cheeks are abscesses (either strumous or secondary to dental trouble), primary syphilitic sores, tertiary syphilitic ulcers, the different inflammatory affections described under "stomatitis," mucous and sebaceous cysts, lupus, epithelioma and rodent ulcer. Most of these affections are so much like those affecting the lips that a separate description is unnecessary, but the conditions described in the following paragraph deserve notice.

Salivary Fistula.—This results from the wound of Stenson's duct. It consists of a small opening on the cheek from which saliva dribbles during mastication. The treatment consists in restoring the continuity of the duct and providing a free opening for it into the mouth, and then if the fistula does not heal, closing it by a plastic operation.—*British Journal of Dental Science, January, 1897.*

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WHAT A DENTIST SHOULD DO IN CASES OF POISONING. By C. W. Glassington, M.R.C.S., Edin. 1. Send for medical assistance, saying, if possible, what the patient has taken or what has been administered. 2. If in doubt as to what poison has been taken, give an emetic of mustard and water, or a hypodermic injection of apomorphin. 3. Refer to the following poisons and their antidotes:

Aconite.—1. Stomach tube. 2. Emetics of mustard and water, sulphite of zinc, or apomorphin. 3. Stimulants. 4. Recumbent position. 5. Inhalation of nitrite of amyl. 6. Artificial respiration.

Ammonia (Strong Solution of).—1. Vinegar and water, lemon or orange juice, dilute acetic acid in water. 2. Demulcent drinks.

Arsenic.—1. Stomach tube. 2. Emetics of mustard and water, or apomorphin. 3. Magnesia in large quantities or dialysed iron (1 ounce). 4. Stimulants.

Carbolic Acid and Creasote.—1. Stomach tube. 2. Emetics of apomorphin or mustard and water. 3. Epsom salts or Glauber's salts, one-half ounce in one-half pint of water. 4. Olive oil. 5. Inhalations of nitrite of amyl.

Caustic Potash and Caustic Soda.—1. Vinegar and water, lemon or orange juice. 2. Olive oil freely. 3. Demulcent drinks.

Chromic Acid.—1. Emetics. 2. Stomach tube. 3. Chalk and milk. 4. Demulcent drinks.

Cocain.—1. Inhalations of nitrite of amyl. 2. Stimulants. 3. Hypodermic injection of ether.

Copper (Sulphate of).—1. Stomach tube. 2. Emetics. 3. Milk and eggs *ad lib.*

Ethyl Chlorid.—1. Fresh air. 2. Stimulants. 3. Artificial respiration.

Hydrochloric, Nitric and Sulphuric Acids.—1. Soap and water. 2. Any alkali. 3. Olive oil. 4. Milk and egg. 5. Hypodermic injection of morphin (stomach pump not to be used).

Iodin.—1. Stomach tube. 2. Emetics. 3. Starch and water. 4. Inhalations of nitrite of amyl.

Nitrite of Silver.—1. Common salt and water freely. 2. Emetics. 3. Demulcents.

Nitrite of Amyl.—1. Fresh air. 2. Recumbent position. 3. Artificial respiration.

Opium.—1. Stomach tube. 2. Emetics. 3. Keep patient moving about. 4. Cold douches. 5. Inhalations of nitrite of amyl. 6. Artificial respiration.

Oxalic Acid.—1. Alkalies, such as chalk, lime of whiting. 2. Castor oil.

Perchloride of Mercury.—1. Stomach tube. 2. Emetics. 3. White of egg (unboiled). 4. Stimulants.

ANESTHETICS. *Nitrous Oxid Gas.*—1. Pull the tongue forward. 2. Fresh air. 3. Nitrite of amyl. 4. Artificial respiration.

Ether.—Leave responsibility with anesthetist.

Chloroform.—Never allow it to be given for tooth extraction. If inhaled—1. Pull tongue forward. 2. Fresh air. 3. Flap chest and face with end of wet towel. 4. Artificial respiration. 5. Invert patient. 6. Nitrite of amyl. If swallowed—1. Stomach tube. 2 Emetics. 3. Nitrite of amyl. 4. Rouse patient.

HANDY EMETICS. 1. *Common Salt.*—One tablespoonful in half a pint of tepid water. 2. *Mustard.*—Two tablespoonfuls in half a pint of tepid water. 3. Put finger in the throat or irritate fauces with a feather.—*British Journal Dental Science, January, 1897.*

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METAL PLATES. By L. P. Haskell, D.D.S., Chicago. There is a vast amount of injury done to the alveolar process by the retention of undue heat, owing to the non-conductibility of rubber, which I have closely observed, as I had used metal plates before its introduction. As aluminum is cheap, and makes a rigid, light, cleanly, unobjectionable plate, there is no reason why patients should wear rubber for *permanent* work. Also, a better fit and adhesion can be obtained in difficult cases than with rubber.

A plaster impression is always indispensable. It must be taken high over the cuspid eminence, as in all cases plates should be higher and the gum fuller here than elsewhere, to restore the contour of lips.

No air-chambers are needed, but as the center of palate is hard and the only portion of the upper jaw which never changes, while the process to a greater or less extent absorbs, a "relief" should be placed over the hard center to prevent at present, or in the future, rocking of the plate. This consists of a thin film of wax extending well up near the margin of ridge and the edges, chamfered thin so as to leave no evidence of it on the plate. This is the only change I make in the model. The sides of the model should be flared so it will deliver itself readily from the mold.

The sand should be oiled, for then it can be used many times without re-oiling and so is always ready for use, and there is no danger of holes in the die from the presence of steam, as when water is used for moistening. Use a large flask for molding so as to have plenty of room for packing. This can be made of sheet-iron, four inches in diameter and three in depth.

Babbitt metal is the only alloy which has all the qualities necessary for a dental die, viz., non-shrinking; sufficiently hard not to batter; tough enough not to break, and a smooth surface. The proper formula is copper, 1 part; antimony, 2 parts; tin, 8 parts. Nothing has so simplified the fitting of metal plates as the use of this metal, as forty-five years' use has demonstrated. As pure lead cannot be poured upon Babbitt metal without danger of adhering to it, the melting temperature is reduced by the addition of tin—5 parts lead, 1 part tin. Coat the die with whiting and stir the metal until it begins to thicken, then pour quickly.

Oil the dies to prevent the metal from adhering to the plate, being careful to wipe off all traces before annealing again. Aluminum is annealed by holding over a Bunsen flame until a pine stick chars on the surface. It should be used not less than 24 gauge up to 22.

By using a loop-punch the rubber is held firmly to plate. The plate should be tried in mouth before arranging teeth, to be certain it is all right. Be sure it presses up closely at the rear so air cannot get under it. The teeth should always be arranged by the mouth, remembering that there are more failures from faulty articulation than from all other causes.—*Dominion Dental Journal, Jan., 1897.*

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SUGGESTIONS. By G. Lenox Curtis, M.D., New York city. In making a diagnosis, remember that similar symptoms may indicate vastly different diseases, and that two causes may exist with apparently the same symptoms. One found, treated and cured, lessens the disease, but by no means eradicates it.

The cause of bad and offensive breath, the purulent condition of the gums, is often taken for rhinitis and treated as such, without favorable results, when, in fact, it is due to caries, abscessed teeth, antrum disease and necrosed bone. None better than the dentist is able to diagnose such complaints, and all such patients should be sent to him for examination. His constant working in the mouth makes him master of these affections, and many a tooth which the physician condemns to the forceps would be saved if left to his judgment. I am well aware that in the country village where there is no dentist physicians are called upon to extract teeth, some doing so indiscriminately, and often, I am compelled to say, just for the fee. If the course in our medical colleges included lectures on diseases following affections of the teeth, the importance of saving them, and their bearing upon the physical health of the patient, it would be a great boon to suffering humanity, increase the usefulness of the physican, and reflect credit upon the schools. I do not mean here a course in dentistry, but the teaching of oral surgery, as the former should be left for the dental colleges. In the human economy there are no superfluous organs; all are intended to last a lifetime, and in this day, as well as in generations past, we require all our teeth for perfect mastication and for the articulation of speech. There is nothing more distorting to the contour of the face than the loss of teeth and wearing illy-designed substitutes. The physician who attempts curing indigestion, dyspepsia, anemia and the like, where there is improper mastication of food, the mouth bathed in filth from caries and abscessed teeth secreting pus, where the gums are inflamed and diseased from lack of cleanliness, is working against hope, and does both himself and his patient great injustice.

How many cases of offensive breath that obstinately resist treatment come from these sources, especially from the diseased antrum, caused by abscess from diseased teeth. The physician should as conscientiously examine the mouth of every patient when he is considering the general health, or in case of any cranial symptoms, like neuralgia, as he would take the temperature or the beat of the heart. I believe that fully 90 per cent of diseases of the face and neck are traceable to affections of the teeth. Facial neuralgia, aptly termed the "devil's disease," nearly always is due to this physical condition, being rarely ever cured from the internal application of medicine. Only recently I was called to diagnose a case of obstinate, purulent discharge from the nose, which for seven years had baffled continuous treatment from the surgeon, physician and nasal specialist. My diagnosis of double antrum disease was based on finding two abscessed teeth on either side of the mouth emptying into their cavities. Within five minutes, by use of a trochar and canula, I was able to draw away fully two ounces of terribly offensive pus. No doubt remained as to this being the cause of her years of treatment and sickening breath.—*Dominion Dental Journal, January, 1897.*

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VALUE OF STATISTICS IN CATAPHORESIS. By L. E. Custer, B.S., D.D.S., Dayton, O. The last number of this (*International*) journal contains a record of forty cataphoric operations by Dr. Louis Jack. Considerable time and care must have been given to obtain the data recorded, and while the effort is certainly commendable, we do not see that the data are of much practical benefit to other operators, or of much value in establishing rules and tables for reference for his own or the use of others operating even the same appliance, unless he can convert the number of cells and the contact points of the rheostat into volts.

The variations both in the manner and means of applying the current and in the cavity are of such wide range that it will always be difficult to obtain accurate data in these operations, and yet if we are to make a success of cataphoresis we must make these records and learn what we can from them.

By the title of the paper Dr. Jack does not intend that they should be more than notes on cataphoresis, and yet these notes could be made of great value if, instead of giving the number of cells and the pins of the rheostat, he had given the pressure in volts as measured on a standard volt-meter.

The voltage of the different cells on the market is not the same, nor does the voltage of a single cell remain the same during all its life. By the construction of a cell and its elements there may be a wide range in the voltage. A Smee or a Walker cell will produce an electrometric force of but half a volt, while a chromic acid or a Fuller cell would give two volts or four times the former. This shows that it is important to know the kind of cell being used.

Again, the chemical action going on in any given cell is not the same at all times. In some cells there is a steady voltage for a time, and then a gradual decline. This is characteristic of open circuit cells. In a dry cell there appears to be a "warming up" of the chemical process, and with it a rise in the voltage followed by a drop. At the close of the life of any cell there is always a lower voltage than when the cell was new.

The rheostat used for controlling the current is also liable to variation. This is especially true of water and graphite instruments for this purpose. Water becomes a better conductor as it heats, while all metals act in just the reverse. This property of metals, except in the case of iron, is scarcely appreciable, but with water it is somewhat marked. The form of graphite rheostat, in which this material is contained in a powdered form in a flexible receptacle, is even more uncertain than water, and those rheostats which are made of a thin coating of graphite upon slate or the like are not to be used at all unless a volt-meter is used with them.

Then, again, the conditions which pertain to the patient and the method of applying the current are important factors in securing reliable data. It was shown in a paper read before the March meeting of the Mississippi Valley Dental Society that the enamel is not a conductor of electricity; that it covers the dentin as an electrical insulator, about equal to so much porcelain. The dentin is a conductor only by virtue of the moisture contained in its tubuli, and anesthesia is produced only in the fibrils contained in those tubuli whose mouths open into the cavity. The fibrils in those tubuli covered by enamel become anesthetized only when the cocain has reached the pulp through the exposed tubuli. We might say that, except where there is a very little penetration of the current laterally at the interzonal layer, unexposed dentin can only be anesthetized reflexly. To do this the cocain must be carried entirely through the dentin and the coronal portion of the pulp be infiltrated.

Now, since the electric current, in flowing from the positive to the negative through the patient, flows through what we might call a constriction equal to the area of exposed dentin, and since no more can flow under a given pressure in volts than can pass this point, it is evident that the exposure of dentin and the distance to the pulp alone determines the current in amperes which will flow. Of course there is resistance between the pulp and the negative electrode on the cheek or hand, but that is so very small as compared to that offered by the dentin as to be negligible. A small cavity with a small area of dentin exposed under eight volts would allow, say, one-tenth milliampere to flow, while a large cavity under the same pressure would allow perhaps five-tenths milliampere. There is a distinct proportion between the area of exposed dentin and amperes under the same pressure in persons of about the same age.

The distance from the pulp—that is whether the cavity is shallow or deep—is a feature which relates more especially to the volts that may be attained than to the amperes. It will require a higher voltage in a superficial cavity than in a deep one, because the resistance is greater. This, at the same time, means that with a high voltage in a superficial cavity no more is accomplished than with a low voltage in a deep cavity, and it accounts for the length of time and often the high voltage required in this class of cavities.

That condition of dentin which has been long exposed to abrasion and is without sensation is much like enamel electrically. The tubuli have been filled in with lime-salts and it is almost a non-conductor. It is only when the deeper and sensitive layer is reached that we have the principal condition for cataphoresis—namely, conductivity. Dentin of this character will offer greater resistance than freshly exposed dentin of young persons, and this must be borne in mind in the measurement of current.

The negative electrode should always be placed at the same part of the body, because, as has been shown by Dr. Price, there is a difference of from three thousand to five thousand ohms resistance between the cathode upon the cheek and upon the hand. It is desirable to keep the voltage down, and consequently the most desirable position for this electrode is upon the cheek.

There are so many variable conditions in the operation of cataphoresis that I do not think it is possible to previously estimate with accuracy the number of volts and amperes that a given case under operation will require, and yet by the tabulation of our cases, just as Dr. Jack has done, except that standard measuring instruments be used, I believe we will, after a little experience, be able thereby to tell just when we have gone far enough with the current. We will learn just what the requirements of each case will be and can tell how nearly we are filling these requirements.—*International Dental Journal, January, 1897.*

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COATING CASTS FOR VULCANITE WORK. Procure a quarter of an ounce of collodion, add to this three-quarters of an ounce of sulfuric ether, so as to thin the collodion down, and pour into the bottle containing these a package of ''silver gloss.'' This is a preparation of tin and zinc and may be obtained of all dealers in paints, oils, etc. Though called silver gloss it contains no silver. It comes put up in papers of an ounce or more, in the form of an impalpable powder. It unites to a certain extent with the collodion, when shaken, and is applied to the face of the plaster cast, as well as to the reverse of the investment in the case flasked for vulcanite work, with a camels-hair pencil, leaving a very even and thin film over these, which effectually prevents the adhesion of the vulcanite to the plaster, permitting the case to come from the flask clean. The silver gloss may be had at slight expense, enough to last for a year or more with ordinary use. It should be kept in a well-corked bottle, and the pencil cleaned after each use. Should particles of it adhere to the plate, it can be entirely eaten off by immersing in a bath of nitric acid and water—one-quarter acid, three-quarters water; but this we have not found necessary as it comes from the flask clean.—*Dental Office and Laboratory, January, 1897.*

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SALIVARY CALCULUS. By Dr. Percy Greene, Belmont, N. Y. Read at 28th annual union meeting of 6th, 7th and 8th District Societies, October 27–29, 1896. The lime-like substance commonly termed tartar is found principally on the lingual surface of the lower incisors and the buccal aspect of the superior molars, and as in these locations are found the openings of the principal salivary ducts, it is inferred that these deposits, or a portion of them at least, come from that source.

We find by analysis that tartar is composed of carbonate of lime, phosphate of lime, fat, mucus, and accidental matter. The saliva from which these deposits come is a fluid secreted by three sets of glandular bodies—the parotid, the submaxillary, and the sublingual. Another fluid in connection with the saliva is composed of mucus, which in some cases, it is claimed, also assists in the formation of tartar.

The secretion of the parotid gland has a specific gravity of 1.006 and contains in solution carbonate of lime, little traces of chlorid of potassium, bicarbonate of soda, and sulpho-cyanid of potassium. The submaxillary secretion is nearly the same in composition as that of parotid, although no sulpho-cyanid of potassium is found. It presents a clear appearance, but is very tenacious. That of the sublingual is essentially the same, but shows a little larger proportion of ptyalin.

If the salivary secretion is abnormal it will move sluggishly through the ducts, and the inorganic substances that are held in solution collect on the surface at the necks of the teeth.

We find in different patients different forms of tartar, varying in color from a dirty white to a black, and from a soft consistence to that of a hardness almost impenetrable. The soft brownish kind is the truest form, being composed almost entirely of constituents of saliva. The teeth themselves sometimes exhibit marked effect from the presence of salivary calculus, which forming about one portion soon involves the whole tooth, and in some cases, if not disturbed, would soon envelop the whole denture.

Such a condition as this is not only uncleanly, but it is unhealthy. It soon destroys the attachments of the tooth by its encroachment on the pericementum, causing it gradually to recede. The nutrition being cut off the tooth dies, and in time is exfoliated like any other sequestrum.

The removal of these deposits is one of the most disagreeable tasks we have to undertake, and if a little tired or in a hurry we are very apt to overlook nodules which may form an excellent starting place for more. I have had patients who had been under the care of fine operators; they showed fillings that were excellent, crowns and bridges that were perfect, yet the teeth had not been cleansed from tartar, owing, no doubt, to the unpleasantness of the operation, or to there not being enough money in it.

This idea is a wrong one, and the proper performance of this task is, I think, one of the conscientious duties we owe our profession. Our best class of patients appreciates the importance of this part of the care of their teeth, and when they are disappointed in the attention their family dentist gives them they are likely to go elsewhere. —*Dental Practitioner and Advertiser, January, 1897.*

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USE OF CORUNDUM WHEEL IN THE PREPARATION OF CAVITIES. By Dr. A. Osgood, Bath, N. Y. Read at 28th annual union meeting of 6th, 7th and 8th District Societies, October 27-29, 1896. For several years past it has been my habit to make much use of the corundum wheel in the preparation of cavities for filling teeth. I will speak first of cavities on the coronal surface of the bicuspids and molars. Very frequently the wheel is the first thing I use in leveling down the surface about the orifice of cavity. After this I use simply chisel burs and excavators until all decay is removed and the cavity is properly shaped, when it may be found advisable to use the wheel again to smooth down rough margins. This being done, a filling can be introduced that has a well defined outline, and particles of food will not be retained in the depressions which usually surround it.

The posterior depression of the superior second molar is frequently found quite deep, and if there are any indications of decay there should be a sufficient cutting down to permit the food to glide off, or we are very likely to find occasion to refill the tooth in a much shorter time than should be necessary. They are teeth that are much neglected by the brush and are prone to decay. It is good practice to anticipate caries in the locality mentioned and to make free use of the wheel to lessen the danger to which it is subject.

The third molars very frequently require an entire change of the coronal surface, and the wheel should play an important part if they are decayed. We often find the occluding surface a mass of small cones and fissures, which the wheel will greatly improve, and it should be used until no lodgment for food is left, whether the teeth are decayed or not. They are hardly ever reached by the brush and should be brought as nearly as possible to a self-cleansing condition. If the work of leveling down the enamel on the coronal surfaces of the bicuspids and molars, I mean the marginal portion surrounding the prepared cavity, is thoroughly done, when you see the effect in after years you will feel repaid for the time expended in the operation.

In preparing cavities in the incisors and cuspids I rarely use the wheels or disks, but for approximal cavities in the bicuspids and molars they are occasionally useful for separating the teeth. Usually separations are better made with either straight or bent chisels that are thin and of proper form, but if a disk is used it should be thin and of a fine grit, if it is to be done neatly and with consideration for the feelings of the patient.

In large compound proximal cavities we frequently have a sharp, weak corner, which should be removed. It may be objected that by so doing the masticating surface is lessened, but that is not of so much importance as the strengthening of the tooth by giving it a greater power of resistance. It is much better to grind off all weak corners than to leave them to be broken down sooner or later. It also has the effect of reducing the size of the cavity, which is an advantage. This practice should obtain in all cases in which the teeth are of feeble structure. My success has been the best with this class of teeth when I have heroically used the wheel, and have given the teeth strength by reducing their weak points. The making of wide spaces between them should be avoided, and when possible the filling should be carefully contoured sufficiently to bridge over any opening that is made, but it is better to leave a space than very frail walls.

If this work is attempted with large wheels or disks of coarse grit, such as the dealers usually furnish us, it will not be properly done, besides being a very trying operation to persons that come into our hands. We should remember that a coarse corundum or carborundum wheel is a terror to all who have the usual amount of nerves, and they have the feeling that you are doing your work in a cruel manner, and it adds much to their dread of the dental engine. —*Dental Practitioner and Advertiser, January, 1897.*

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LIGHT IN THE DENTAL OFFICE. By Dr. W. B. Knapp, Portland, Ore. Read at Oregon State Dental Association, August 12, 1896. The fingers will retain their cunning long after the eye has lost its accuracy, and will do good work even when the nerves have to be braced up by a mighty effort for each occasion, only to suffer a terrible relapse when the strain is over. But the eye once exhausted or seriously weakened, causes the operator's work to suffer. He does not realize that the eyes that are a little tired possibly have not only been worked harder than they should, but are no longer accurate. We are told that what we call "seeing" is the photographing of pictures on the retinal purple of the eye, whence they are conveyed by means of the optic nerve to the brain; that each of the rapidly changing pictures uses up a certain amount of this purple, which is being constantly replaced; that certain conditions, especially of light, exhaust the supply and the powers of reproduction more rapidly than others. It behooves us, then, to study well these conditions and economize our resources.

I shall not enter into those abuses of overwork, in which we are so prone as a class to indulge; such as protracted reading in the small hours of the night by the aid of strong, ill-arranged artificial light, frequently lying on our backs, favoring the tired body, but straining the equally tired eyes to their utmost endurance; the use of the microscope, that most enticing but most taxing of all pursuits, etc., but shall confine myself to effects of light in the dental office.

The dentist is eternally calling for new and stronger light, and yet it is not always that which he wants, but a little light right where he needs it. The most perfect light is that of the sun, yet how long could we endure its direct rays on a gold filling? The writer of an article in the *International* lays great stress upon the necessity of a shadow cast by the point of the instrument in all mechanical work requiring accuracy, to enable the eye to perform its functions with ease and a correct appreciation of its efforts, a point that is probably well taken.

We all recognize the difficulty of forming accurate conceptions of the distance away or size of an object when we have no landmarks by which to judge it. It is for this reason that while this writer recognizes the north light as the steadiest and in all ways the best for the artist and many professions, he suggests the south light, which will cast a stronger shadow, as the best for the dentist. Non-familiarity with the technique of our work leads him to overlook many things that would, I am certain, modify his judgment. One point of difficulty is a cavity within a cavity; a situation which would usually prevent the direct rays of light reaching the point of the instrument and so casting any shadow of it at all. The brighter the light pouring into the oral cavity, the more intense, usually, is the gloom of the cavity in the tooth.

In most mechanical pursuits and studies the light, natural or artificial, can be brought to bear directly upon the point it is desired to see. The dentist has a more complex condition to contend with. He is compelled to work fully half the time with reflected light, and not infrequently sees only a reflection of the point of operation. We all recognize how exceedingly trying this latter condition is. We also reverse, as a rule, another condition that surrounds most all who use their eyes intently—generally the point of interest is the point at which light is centered, and when the eye leaves it for a moment it is met by a condition no brighter and probably less intense, and so, to a certain extent, restful. When we look up from a dark cavity it is to be dazzled and for moments half blinded, producing, I presume, for the time chaos in the photographic plates of retinal purple.

The north light is the steadier, and, while it lacks the intensity of the direct rays of the sun, it is also minus the glare that is so trying, and is not so affected by the passing of clouds, is more even the day through, and the retinal purple will not burn up so rapidly.

The morning light is the more pervasive light of the day. I have frequently noticed quite early in the afternoon, while the light out of doors seemed unabated, that it did not seem to have the power of penetrating the oral cavity. In fact, I think most operators prefer to do their gold work in the morning.

Cross lights are not only perplexing but destructive. Particular attention should be given to the arrangement of furniture, the hanging of pictures and the color of walls, that they do not reflect light or dazzle or bewilder the eye as it is raised from the work. If there is paper on the wall, the nearer it is without distinct figures the less it will tire the eye. Some author says that the analysis of light by the spectrum demonstrates that red and yellow tints are irritating to the eye, while green and blue are restful, and anything approaching a purple is destructive. For some years I worked in a room that was covered with a paper almost gold color—bright but without a trace of gilt. The moment you entered the room the eyes seemed refreshed; it was exceedingly light and cheerful and there was a softness about it that never dazzled or irritated the eyes. As you glanced up from your work there was no reflection, yet it seemed to radiate light. I never have seen so much light in a room with so little glare. The blue and green tints absorb light; and while they are, if carefully selected, not irritating to the eye, they are depressing, and I think the light in such a room lacks the power of penetration. I should prefer a soft cream shade.

Curtains play a very important part. With a north light there is no necessity of any curtains to filter the light, simply a shade for the appearance of the window and to possibly shut off a part of the supply. This should be impenetrable. An olive green color is excellent. There should be no openings beside the curtain letting in a long stream of light to catch the eye every time it is raised. A lace curtain is a nuisance and apt to be trying. If you are now using a north light and desire to diminish the intensity of it. use a curtain as nearly as possible the color of old lace.

All artificial light is trying beyond endurance and will not be indulged in by the dentist who desires to do a far larger amount of work by prolonging the years in which he can use his eyes. Have no artificial light arranged so that at any time the eye will catch the flame. I have not worked with a ground-glass globe over an electric light and so cannot say whether it will throw light enough into the cavity to operate by or not. In using the small incandescent lamp in the mouth be careful to have it perfectly shaded from the eye. I think that the lamp-globe might be ground to good advantage.—*Pacific Stomatological Gazette, January, 1897.*

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DISINFECTANTS AND THE CHEMICO-METALLIC METHOD OF TREATING AND FILLING THE DIFFICULT ROOT-CANALS OF SEMI-DEVITALIZED TEETH. By George W. Weld, D.D.S., New York. Read before the New York Odontological Society, October 20, 1896. A true "disinfectant" is supposed to be an agent which is capable of destroying bacteria and neutralizing morbific effluvia. This definition is made in a restricted sense, for some writers include agents, embraced by the word "antiseptic," which are capable only of counteracting septic conditions of animal bodies. It has been said that the sun is one of the greatest of all disinfectants. Doubtless this is true. At the same time we are led to believe that the spores of certain bacteria are not infrequently subject to summer's heat without being destroyed or losing their virulent properties. In the strict sense of the word, a disinfectant is an agent which destroys microorganisms by chemical processes. We have considered a solution of the bichlorid of mercury a perfect disinfectant. Recent experiments, however, have shown that this chemical agent oftentimes produces a definite chemical reaction, resulting in the production of a third compound. Professor Abbott, of Philadelphia, in his experiments found "that in the reaction that is seen to take place between the salts of mercury and albuminous bodies there results a third compound, which has neither the characteristics of mercury nor of albumen, but partakes of the peculiarities of both; it is a combination of albumen and mercury, known by the indefinite term 'albuminate of mercury.' In other words, the process is not a catalytic one, that is, occurring simply as a result of the presence of the disinfecting body which is not itself destroyed in its process of destruction, but is, as said, a definite chemical reaction which takes place within more or less fixed limits; in other words, with a given amount of the disinfectant employed, just so much work expressed in terms of disinfection can be accomplished."

The experiments of Gippert are interesting in this connection. Gippert found that a reaction took place between a solution of bichlorid of mercury and the spores of anthrax bacillus, the result being the apparent destruction of the living properties of the spores. He demonstrated, however, that this did not imply the complete death of the protoplasm of the spores, for when, by use of the sulfid of ammonium, he precipitated the mercury—that is, destroyed the combination of the spores and the mercury—he found that the protoplasm of the spores returned to its original condition.

In this connection, Professor Abbott goes on to state that it is probable that all *inorganic* bodies combine with any or all of the protoplasmic bodies, and, furthermore, that the disinfection of excreta, sputum, or blood, containing pathogenic organisms, by means of a solution of the bichlorid of mercury, is a procedure of very questionable success. Suppose we desire to disinfect the canal of a root of a tooth with a solution of bichlorid of mercury. What may be the result? Why, as soon as the energy of the solution, introduced on a piece of cotton we will say, is exhausted, and after the third compound is formed by the union of the mercury and the albuminous compounds in the root, it becomes inert—at least, as far as its disinfectant properties are concerned; and a *renewal of the same is required* just as soon as this reaction which I have alluded to takes place, which may be, and probably is, within the space of one minute.

It may be said (1) that *heat* increases the energy, and is, in fact, the best of all disinfectants. (2) That whatever disinfectant is employed, the one which is powerful enough to destroy the life of a germ is also, in quantity and time, powerful enough to destroy human life. Indeed, certain spores of certain bacilli have been known to retain their life properties after having been subjected to the heat of boiling water for a period of fifteen minutes. It was this fact, in connection with a second and third boiling (or fractional sterilization), that upset Needham's theory of spontaneous generation.

It is perhaps difficult to draw a line and state positively what agent is an antiseptic but not a disinfectant; for although it is claimed that an antiseptic is not a disinfectant and a disinfectant is always an antiseptic, it is altogether probable that if pathogenic germs or spores were immersed for any great length of time in any of the so-called antiseptic solutions, the result would be their ultimate death.

By the word *sterilization*, in contradistinction to *disinfection*, we mean the destruction of bacteria by heat or mechanical means instead of a chemical process. There are two kinds of heat employed for this purpose, viz., dry and moist heat. Of these two, moist or steam heat is generally used in the laboratory for sterilizing all kinds of nutrient media, for the reason that sterilization is thus accomplished by a much lower temperature.

We often hear of *deodorizers* and *germicides*. A deodorizer is only an agent that destroys offensive odors—that is, the chlorid of zinc or sulfate of alumina, etc. The so-called "germicides" frequently seen in public and private lavatories are, as a rule, nothing more nor less than deodorizers. The agents employed only hide a smell; and the trickling of a small quantity of a solution of the chlorid of zinc over the bowl of a water-closet is about as effective, as far as the destruction of pathogenic germs is concerned, as so much cold water would be. Indeed, it has been observed that if germs capable of producing disease possessed an odor, and if offensive sewer gas contained germs, hiding the smell would be the best means of propagating germs and spreading disease. A *germicide* is a true disinfectant, for it is, according to the modern definition, an agent capable of killing all microorganisms.

In 1891 I read a paper before the Odontological Society of New York, entitled "The Injurious Effect of Vegetable and Mineral Acids upon the Enamel of the Human Teeth, with Some Curious Illustrations." I stated at the time that I should attempt to put the experiments in such order that they might suggest further inquiry in this special direction. After five years of thoughtful study and painstaking efforts, I believe the problem of filling the root-canals of teeth—at least the most difficult ones—has been solved, and that the *new method* which I shall introduce to you this evening will prove an aid in the preservation of the human teeth.

Of the illustrations which I have alluded to, those of you who were present at the meeting which I have mentioned will recall the simple experiment of placing a piece of zinc in strong sulfuric acid (H_2SO_4), and the acid had no effect on the structure of the zinc; but when a little water was added the zinc was chemically destroyed; that it was the sulfate of zinc resulting from the first chemical action, insoluble in the concentrated acid, which formed a protecting coat over the surface of the zinc; the addition of water dissolved the protecting sulfate and rendered further chemical action possible. I placed a tooth in strong tincture of the chlorid of iron, containing free hydrochloric acid, and demonstrated that the enamel of the tooth was not injured. It was protected by the oxid of iron, which adhered so closely to the surface of the tooth (as the sulfate of zinc formed a protecting coat to the zinc) that immediate chemical action was impossible. I illustrated in other ways; for instance, where mechanical interference, due to a chemical action and the formation of a third compound, prevented a strong acid from chemically destroying tooth-structure. Furthermore, I demonstrated that, irrespective of any mechanical interference, the chemical destruction of tooth-structure did not depend on the *strength* of either an *organic* or *inorganic* acid.

When pure carbonate of lime, or common chalk, was immersed in strong acetic acid, on account of its vicidity chemical action was extremely slow; but when water was added the carbonate was immediately attacked and dissolved. The same thing occurred when a tooth was immersed in strong acids and simple syrup; and I repeat and emphasize, it is not the strength of acids which chemically destroys tooth-structure, but it is oftentimes a question of *solubility* or *fluidity;* water increases the destructive energy of almost all kinds of acids on the lime-salts of the teeth. There are one or two exceptions to the rule relating to the fluidity of a solution and the destructive energy of acids. When we immerse a tooth in the tincture of the chlorid of iron containing free hydrochloric acid, and dilute with alcohol instead of water, there will be formed on the surface of the enamel a compact, protecting peroxid of iron of the anhydrous form $Fe_2. (OH)_6$. The following formula will show how the hydrated peroxid is formed from the anhydrous peroxid: $Fe_2O_33H_2O{=}Fe_2\ (OH)_6$.

The *new method* of disinfecting the difficult and so-called "inaccessible" root-canals of semi-devitalized teeth is based on the discovery and principle that a certain combination of acids will act upon a certain sensitized alloy quicker than on tooth-substance; that when such an alloy is inserted into the root of a tooth and subjected to the influence of one drop of such a combination of acids, there is an immediate chemical action which results in a thorough disinfection of the canal of the root and the formation of two compounds, viz.: (1) A reaction forming an oxid which envelops the metal and serves as a permanent filling. (2) A reaction forming an albuminate after coming in contact with the albuminoid bodies, and the salts of the alloy, in the canal of the root. In other words, the animal matter in the tooth, whether putrid or otherwise, has changed its peculiarity through the influence of a definite chemical action.

Permit me to repeat one or two of these experiments, for they lead up to the nature of the acid and metal employed, and they also illustrate that it is not always the strength of an acid that chemically destroys the integrity of tooth-structure. I have in this glass some chemically pure sulfuric acid which, for reasons I have explained, is inert, so far as its destructive energy affects either the lime-salts of a tooth, the metal zinc, or the sensitized alloy. When I add a little water both metals are dissolved, the sensitized alloy being the most susceptible to chemical action, the tooth is decalcified. If I decrease the fluidity of the liquid by adding more sulfuric acid chemical action is arrested. Chemical action also commences simultaneously upon both metal and tooth, and the condition of solubility or fluidity which affects one also affects the other.

The following experiment illustrates how a strong acid quickly destroys a tooth without affecting metals: I will pour into a glass a small quantity of nitric acid, the strength of which is unchanged, although a foreign substance has been added and its color and specific gravity somewhat altered. Now, if I place in this acid a tooth the enamel is almost immediately destroyed; but when I introduce one of these sensitive metallic broaches into the same acid you will observe there is no chemical action. If I employ the tincture of the chlorid of iron containing a small quantity of free *hydrochloric acid*, the result is just the opposite, for in this case, and for reasons before stated, the tooth-structure is not affected, but the metal is slowly dissolved,

My next experiment relates to nitrohydrochloric acid or *aqua regia*, and shows how quickly a metal can be dissolved without affecting the lime-salts of a tooth. I will employ for this purpose nitric acid which has undergone a slight modification, and will add about one-third hydrochloric acid. Into this solution I will drop a tooth with perfect enamel and a small piece of gold foil. In a short time it will be observed that the color of the solution has changed to that peculiar yellow-golden color which is characteristic of nitrohydrochloric acid in which gold has been dissolved; in fact, the gold has already commenced to dissolve. In other words, the gold will be dissolved and the enamel of the tooth will be protected; not to that degree that the tooth is protected in the strong sulfuric acid, nor in the tincture of the chlorid of iron, but protected from immediate chemical action.

The "Chemico-Metallic Method" for filling the difficult root-canals of semi-devitalized teeth presupposes no loss of tooth substance. If perchance, in some cases, the energy of the acid employed is not entirely exhausted by its greater affinity for the metallic broach, and a surplus of the acid frees an infinitesimal quantity of the lime-salts, the chemical result, in addition to the oxids produced by the action of the acid upon the metal, must be a basic carbonate and phosphate. The method presupposes that whenever a delicately-constructed steel broach can be introduced into a root-canal, whatever its length may be, whether straight or tortuous, whether it be filled with semi-devitalized matter or putrescent pulp and fetid gases, that canal can be thoroughly treated, disinfected and permanently filled within a period of five minutes. It is not claimed, however, that the method will cure an alveolar abscess, but rather to remove the cause which, in many cases, would produce an abscess. It is not claimed for the method that every root-canal can be disinfected and perfectly filled, for some root-canals will not admit the introduction of any kind of an instrument, however delicately constructed—much less a medicament. The dentist who asserts that he can accomplish such a thing, whatever method employed, and that he is never troubled with abscessed roots after *he* has treated them, makes an assertion which, in the writer's humble opinion, is pretty nearly on a par with imbecility.

The acid employed in the "Chemico-Metallic Method" is the nitrohydrochloric acid slightly modified. In other words, nitric acid charged with chlorin; it is the chlorin which attacks the sensitized metal. The specially-prepared acid resembles carbolic acid in many respects. Both are irritant poisons and coagulate albumen. When applied to the skin or mucous membrane both produce a burning sensation and an eschar is formed. Its escharotic action, however, is very superficial, which is probably due to its greater power to coagulate animal matter. Resembling carbolic acid, or creasote, it does not immediately destroy rubber-dam, linen fabrics, or tooth-structure. In one respect it is unlike carbolic acid—to a much greater degree a combination with the alkalies entirely checks its chemical and physiological action. It is powerful enough to kill all microorganisms that may be in the canal at the time of filling. The metal employed is composed of silver, tin and zinc. The last two metals mentioned are malleable and fairly ductile, but they both lack the necessary stability for a broach; hence a little silver is added.

The broaches are one and one-quarter inches in length, and made as stiff as possible without sacrificing affinity for the acid They are cut off with a pair of scissors specially made for the purpose. The pair which I hold in my hand has, as you will observe, very short blades placed at right angles. Another pair with short curved blades, presented to me by Dr. Northrup, I have found useful for the purpose; but almost any pair of short and curved-bladed scissors will answer, especially if a little nick be filed in one of the blades near the point to catch and hold the metal. To facilitate the operation, cut the broach off after it is in the root only half-way; it can then be pushed in with any suitable flat-pointed instrument. I am in the habit of using, for this purpose, one of the old-fashioned inverted cone-bur instruments. Whatever shaped scissors may be employed, the blades will rapidly corrode, and can be used only for this purpose.

As heretofore stated, the method relates to difficult and "inaccessible" root-canals. Its application is particularly directed to the roots of the following teeth: (1) The anterior roots of inferior molars, where in each molar there is *one root* and *one foramen* and *two delicate hair-line canals*. (2) The roots of inferior bicuspids with one or two small canals. (3) The roots of inferior centrals and laterals. (4) The *two buccal roots* of all the superior molars. (5) The superior bicuspids, containing *two delicate canals* instead of one. (6) The superior laterals, with hair-like canals.

By way of illustration, suppose we have the anterior root of an inferior molar to fill. The posterior root having, as a rule, but one canal, offers but little, if any, difficulty to a skillful operator. But for the proper filling of the anterior root there are a number of difficulties to overcome. First, it is inaccessible; then a front view of this root shows a thin septum of bone separating two distinct hair-like canals, from a half to three-fourths of an inch in length, which, in size, will only admit the smallest kind of a flexible steel broach. We often meet with roots such as I have described, where it is possible to insert a steel broach as far as the apical foramen, but impossible to introduce medicated cotton or properly fill with any known material. Now, in such a case, try the "*Chemico-Metallic Method.*" After properly adjusting the rubber-dam, and carefully removing all the moisture from the cavity, insert into the root-canal a fine flexible steel broach. Having ascertained the exact location, size, and length of the canal, we substitute the flexible sensitized metal; then touch the metal with one drop of the prepared acid. In two or three seconds we find that a reaction has taken place throughout the length of the root-canal. An oxid had been formed and the animal matter in the root has undergone a metamorphosis (it has become an albuminate of the sensitized alloy), and the root has been completely disinfected. (Whenever a metal is subjected to the influence of an acid, on account of chemical action, there must be a generation of gas. In the "Chemico-Metallic Method" this gas is eliminated in the pulp-cavity at the point of entrance, and with it are embraced the fetid gases contained in the root-canal. This chemical action may continue for a period of five or ten minutes. It may appear advisable then to employ a cotton dressing and gutta-percha, and postpone permanent filling of the cavity for a day or two.)

Cut off the end of the sensitized alloy and the root is disinfected and filled. But it is not necessary to leave the metal in the root. Suppose we desire to crown a root that first requires disinfecting. All we have to do is to *remove the metallic pin*, enlarge the root-canal, and adjust the crown in the usual way. Now let me illustrate the manner in which this acid and metal act on albuminoid substances. I hold in my hand the root of a cuspid with an enlarged canal. I will now substitute for the dead pulp, which might be present, but is not, a small piece of calf's liver, which is in a putrefactive state. As you will observe, I insert the alloy, which is in the form of a broach. I now touch the metal with a drop of the acid. You observe the chemical action which is produced by the acid and metal coming in contact. The reaction has already taken place; the oxid has been formed, the peculiarities of the animal matter in the root have been changed to the extent that it is very doubtful if putrefaction can ever take place. As a further illustration, I have immersed in the acid contained in this bottle a piece of liver which happens to be that of a guinea-pig. If it were any other organ of an animal's body, however, the result would be the same. As you will observe, in appearance the character of the animal matter is entirely changed; it has been coagulated. Microscopical examination reveals the products of cellular degeneration. Whether putrefaction would ensue after the acid is removed by a thorough washing I am unable to say; but I feel safe in claiming that any small quantity of dead animal matter that may be left in the root of a tooth and then subjected to the influence of the acid, plus the salts of the metallic alloy, thereby forming an albuminate, will so change its character that putrefaction will be an impossibility.

In this connection I have prepared in a saucer a small piece of calf's liver which has been studded with the sensitized broaches and allowed to remain until it has become putrid. When I pour a small quantity of the acid upon it a fierce chemical action takes place; the chlorin attacks the metal, the fumes of nitrohydrochloric acid are thrown off, the dead animal matter is coagulated, the bacteria are destroyed, the oxids and the albuminates are formed, all odor disappears, and disinfection is accomplished. I have made a series of experiments relating to the merit of the various antiseptic solutions prepared for dentists, especially the so-called balsamic preparations, the principal ingredients of which are boric acid, oil eucalyptus, oil gaultheria, etc.

Of all the preparations ending with the syllables "in," "tin," "id," "sol," "tol," the one that ends *fine* is the one that ends with "mol." I refer to euthymol as being the best and strongest of all the balsamic solutions; for when the experiment just made is repeated, and a small quantity of euthymol is poured upon a piece of decaying liver, minus the metal points, there is less odor perceptible: and altogether it is a superior antiseptic. Any solution which hides the smell of a dead pulp is a valuable acquisition to a dental office.

The following table of experiments indicates the potency of euthymol as a germicide and antiseptic.

The gelatin plates are made by taking up a small amount of the culture of the germ on a loop of platinum wire, introducing it into the euthymol solution contained in a test-tube, and stirring thoroughly. The platinum wire is then sterilized in the flame of a Bunsen burner. Next, a wire loop bearing a small quantity of the euthymol solution containing the germs is taken out and stirred in a tube of sterilized softened gelatin. This tube of planted (inoculated) softened gelatin is then poured out into a small sterilized flat-bottomed glass dish with glass cover, which is shaken well to distribute the gelatin over the bottom. This is allowed to stand for three days at room temperature, and then the colonies are counted. The colonies (the small whitish dots formed in the gelatin upon standing) are the progeny of each individual germ not destroyed by the euthymol.

In the first series of experiments, gelatin plates were planted with typhoid-fever germs that had been exposed to the action of 100 per cent euthymol for different periods:

Plates planted immediately after immersion of germs in euthymol.	Planted after five minutes.	Planted after ten minutes.	Planted after fift'en minutes.	Planted after thirty minutes.	Planted after sixty minutes.
Few colonies	0	0	0	0	0
Few colonies	0	0	0	0	0
Few colonies	0	0	0	0	0

Second series of experiments, 25 per cent euthymol used instead of 100 per cent:

Plates planted immediately after immersion.	Planted after five minutes.	Planted after ten minutes.	Planted after fift'en minutes.	Planted after thirty minutes.	Planted after sixty minutes.
Many colonies.............	0	0	0	0	0
Many colonies.............	2	0	0	0	0
Many colonies.............	1	0	0	0	0

Third series, 100 per cent euthymol used; sputum substituted for typhoid-fever germs:

Plates planted immediately.	Planted after five minutes.	Planted after ten minutes-	Planted after fift'en minutes.	Planted after thirty minutes.	Planted after sixty minutes.
No colonies or growth	0	0	0	0	0
No colonies or growth	0	0	0	0	0
No colonies or growth	0	0	0	0	0

Fourth series, 25 per cent euthymol used with sputum:

Plates planted immediately.	Planted after five minutes.	Planted after ten minutes.	Planted after fifteen minutes.	Planted after thirty minutes.	Planted after sixty minutes.
No colonies or growth......	0	0	0	0	0
No colonies or growth......	0	0	0	0	0
No colonies or growth......	0	0	0	0	0

Fifth series, 10 per cent euthymol used with sputum:

Plates planted immediately.	Planted after five minutes.	Planted after ten minutes.	Planted after fifteen minutes.	Planted after thirty minutes.	Planted after sixty minutes.
Three colonies.............	0	0	0	0	0
0	0	0	0	0	0

Beef bouillon tubes were planted with dust, typhoid-fever and pus germs, then different percentages of euthymol added, and the tubes placed in an incubator for forty-eight hours. The following table shows the germs used, the percentage of euthymol added, and the resultant growth, if any:

Beef Bouillon Tubes	Euthymol Added.						
	None.	75 per ct.	5 per ct.	3 per ct.	7 per ct.	11 per ct.	15 per ct.
Inoculated with ordinary dust	Infinite growth	Some growth	Slight growth	Slight growth	No growth	No growth	No growth
Inoculated with pus germs	Infinite growth	Some growth	Slight growth	Slight growth	No growth	No growth	No growth
Inoculated with typhoid germs	Infinite growth	Some growth	Slight growth	Slight growth	No growth	No growth	No growth

I will now immerse a tooth with perfect enamel in the acid (in fact, this same tooth has already been immersed in the dental acid for a period of one hour). I will leave it there for a minute or two. You will observe that when I remove it I take it up on a piece of absorbent cotton and carefully wipe it; to have it come in contact with water, even at this time, would result in a chemical action and a very serious detriment to the tooth-structure. You will observe that the enamel of the tooth has not been injured in the slightest degree. But when I place in the same acid a small piece of the sensitized alloy, you will observe what may be called a chemical explosion. If I add a little of the concentrated sulfuric acid, chemical action is arrested. And why? 1. Because I have changed its fluidity; it is now viscid in character, and protects the alloy by a mechanical interference, just as I have told you that the enamel of a tooth is protected in strong acid or with a thick syrup and acid.

2. For the reason that the surface of the alloy has probably been covered with a sulfate which is insoluble in this medium. If I add a little water, however, the protecting sulfate is dissolved and chemical action commences again, just as it did when I added a little water to sulfuric acid containing a piece of common zinc. And, for the same reasons, when I immerse a tooth in the acid there is no chemical action.

It would seem that we can accomplish by this method about all that can be accomplished, viz., eliminate the fetid gases in the root; coagulate the dead animal matter; destroy the microorganisms; form two new compounds—the oxid and the albuminate of the sensitized alloy—and, finally, disinfect and thoroughly fill the root. What more is there left for further putrefaction, and what doubt can there be concerning the "permanency of asepsis"?

There are one or two objectionable points associated with this "method." The vehicle employed for disinfection is a powerful acid, and should be protected and used as carefully and intelligently as carbolic acid or creasote. It stains the fingers, and if spilled upon the table or bracket, steel instruments will rapidly corrode and oxidize. The "method" is not intended, however, for careless operators. Accepting whatever objectionable features with which it is associated, it may be said that its possibilities, as a chemico-mechanical achievement, have been amply demonstrated by clinical experiments during the past year and a half, and that as a practical adaptation to a purpose, it will save time for the patient and lighten the toil of the dentist.—*Dental Cosmos, January, 1897.*

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SOME OBSERVATIONS ON SUPPURATION IN THE ANTRUM OF HIGHMORE AND ITS VICINITY. By J. Jackson Clarke, M.B. Lond., F.R.C.S. Before considering the morbid conditions of the antrum which more frequently present themselves to the dental surgeon, it may not be out of place to give a brief *resume* of the anatomy of the part. Although the formation of the sinus begins about the fourth month of fœtal life, the space is still very small at birth, and it is not until the second dentition is completed that it reaches its full development. Sections of the upper maxillæ of children ranging from six to nine years show that the anterior or facial wall of the space is thick and contains much cancellous bone. As the eruption of the permanent teeth is completed the walls of the sinus become thinner from the absorption of the inner layers of bone and consequent increase of size in the antrum. When the adult condition is attained there is a wide range of form and dimensions observable in comparing the antra of different, and even of the same, individual. The generally recognized type-form is the pyramid with the nasal surface as base, and facial, orbital and zygomatic surfaces to complete the tetrahedron. This pyramidal conformation is departed from most frequently by bulgings into the alveolar process of the upper maxilla. In what may be termed the normal condition, it is hardly necessary to say that the antrum comes into close relationship with the outer alveoli of the molar teeth. According to Zuckerkandl the most frequent departure from the average extent of the antrum is an extension from the lower and anterior limit of the space forward over the bicuspid teeth, the alveoli of which then project into the floor of the antrum. When the alveolar extension of the antrum is well marked, the cavity may easily be opened in the extraction of a tooth. A further extension of the cavity is now and then observed; the cavity then extends into the palate, reaching in some instances, according to Zuckerkandl, to within a millimeter or two of the middle line.

Pathological Conditions.—The most important of these in relation to dental surgery is empyema of the antrum, secondary to suppuration about the root of a tooth. When the case is rapid there is no difficulty in following the clinical course of events. As an instance of this class of cases the following case may be mentioned: A man, aged 71, who had been attending my out-patient department at the Northwest London Hospital for a Dupuytren's contraction of the fingers, associated with gout, returned, complaining of pain caused by inflammation about the carious stumps of the cuspid and bicuspid teeth of the right upper maxilla. I referred the patient to my colleague, Mr. C. F. Rilot, who extracted the stumps. The patient came back to me three days later and said that the pain had, if anything, increased. It was now of a neuralgic character, and was referred chiefly to the distribution of the infra-orbital nerve. There was at this time no swelling in the outer wall of the nasal fossa nor any other definite symptoms of antral abscess, but suspecting the presence of pus in the antrum I advised the patient to come into the hospital, but this he declined to do. This delay probably cost the patient his life. A week later he reappeared. The pain had still further increased, and now there was some redness of the cheek and a distinct swelling in the middle meatus of the right nasal fossa, where the mucous membrane was bulged inwards and presented some flakes of pus. The patient now consented to come into the hospital, and, matters being urgent, I had him prepared at once for operation. Under ether I perforated the antrum through the canine fossa and evacuated over an ounce of thick pus. The antrum was then gently irrigated and the patient was put to bed. The immediate result was a considerable relief to the pain, but the patient complained of headache, referred to the back of the right eye. This headache became somewhat suddenly worse on the fourth day after admission, the temperature went up to 103 degrees, and slight proptosis of the right eye set in. The question of opening the right frontal sinus was now considered, but the deep-seated pain and the character of the proptosis—which was directed forward without any downward deviation—pointed rather to infection of the ethmoidal cells.

While the grave operation of opening these cells through the frontal sinus was under consideration, the patient became unconscious and died with all the symptoms of meningitis. On making a post-mortem examination it was found that the antrum was completely drained. The mucous membrane was detached from the bones forming the upper meatus and roof of the right nasal fossa. The right half of the cribiform plate was necrosed, and the dura-mater covering it was sloughing. The ethmoidal cells were full of pus, and the anterior half of the right cerebral hemisphere was covered with pus. The case was clearly one of antral suppuration, secondary to caries of the teeth, and served to show what grave responsibilities may attach to such cases. Of course, primary antral empyema may be complicated by toothache so that it is difficult to tell which was the first event. In the case just related the mucous membrane of the antrum was thin and not, as it is in cases of primary empyema, thickened, polypous and studded with cystic dilatations of the glands. In diagnosis electric illumination from the mouth is often of great utility,

There is one condition which may lead to or be mistaken for empyema of the antrum. This is a large cyst around the root of a tooth. Such cysts are commonly due to chronic alveolar abscess, and are covered by a thin layer of bone formed from the periosteum which is raised up over the collection of pus. When the tooth is removed pus escapes, often in surprising quantity, and it may be found that the abscess has extended into the antrum by thinning and perforation of the upper and posterior wall of the cyst.--*Dental Record, January, 1897.*

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A DEFECT IN PLATINUM PINS. By W. Booth Pearsall, F.R.C.S.I. Read at annual meeting of the Irish Branch, at Dublin, December 4, 1896. Twelve years ago I made an upper gold denture for an old lady who had been a patient of mine for some years. She had always treated me with the greatest confidence and good will, and I looked upon her as one of my best friends, so far as my professional skill was appreciated and used by her. The denture was designed to carry plate or flat-backed incisor and cuspid teeth, together with some tube teeth, bicuspids and molars, to fill the places of those she had lost from time to time from gouty inflammation of the socket. The plate teeth were backed with gold, ground and fitted, I hope accurately and well. They were positioned in the mouth and on removal invested in plaster and powdered pumice, the wax attachment removed, the solder duly placed in position, the case heated to redness and carefully soldered. The case was fitted in the mouth and there was nothing remarkable about the appearance of the teeth.

All went well for about two weeks, when a central incisor "dropped off." The teeth were somewhat dark in color and not easy to get, about No. 17 of S. S. White's shades. I was so fortunate as to have some extra sets that exactly matched, and a new central incisor was replaced in lieu of the one that dropped off. Two days later my kind old friend returned with the central incisor I had replaced, together with the left lateral. They were replaced with new teeth from the duplicate sets, and the other teeth were apparently intact and above any suspicion of unsoundness. In three days the patient returned with three teeth off, including the central and lateral which had been replaced. To make a long story short, I backed, fitted and replaced three sets of teeth before the "dropping off" ceased to trouble my patient and myself.

To anyone who takes pains with such work and who has acquired practical skill and experience, such a series of mishaps must be very mortifying; skill and time are spent without a satisfactory result to the dentist, and with a rapid deterioration of the stock of confidence the patient has slowly acquired during visits to the practitioner spread over many years. I think I can claim a tolerably good knowledge of the practical details of most mechanical work as practiced in dentures, but I confess I was completely at a loss to account for this series of mishaps. Close examination of the backs of the teeth showed a strange crystalline fracture of the platinum pins, quite unlike the fibrous break we are accustomed to notice in soft platinum which has been deliberately broken across. I had obtained the teeth from a house I had been dealing with for years, and they were made by a manufacturer of world-wide reputation. Some inquiry elicited the fact that the amount of platinum in the market is limited in quantity, and it falls under the few products of nature that can be successfully "cornered" by rich and unscrupulous men. There has been a greater increase in the demand for platinum on the part of electricians, and some dishonest person succeeded in placing in the market a stock of platinum wire alloyed with zinc, which was not discovered till great practical inconvenience had been inflicted upon numbers of honest people.

I do not for one moment imagine that any tooth manufacturer would deliberately use unreliable platinum in his goods. But it does happen that this brittle wire gets into our hands in the mineral teeth placed at our disposal for professional use. Although this defect has been indelibly impressed on my mind, I have not, strange to say, come in contact with anyone who has had a similar experience.

A few weeks ago Mr. George M. P. Murray sent me the teeth I show you and asked my opinion as to the cause of the disaster. Close examination showed the same crystalline fracture as in the teeth that had vexed me so much, which I also show you; and I find on chatting over the matter, that Mr. Murray's experience is the same as mine, the teeth "dropped off" as spontaneously and fortuitously as if Sir Isaac Newton himself were waiting for a further example of the law of gravitation. Since Mr. Murray's communication this most annoying kind of accident and its cause have occupied my thoughts a good deal, and I have made a small collection of teeth in which similar "droppings off" have occurred. One specimen supplied by Mr. Murray is a vulcanite molar of English manufacture, and has not been "fired," or soldered, or subjected to any severe tensile strain. Another is a continuous gum molar, belonging to my own stock, the pin of which broke when I was in summer weather firmly pushing it into the wax-card to which it belonged. The crystalline fracture is well marked, and the tooth is of American manufacture. This annoying defect caused me inconvenience and annoyance in four cases. One was that of the patient I mentioned at the beginning of this little paper, and whose good will and confidence I feel proud to think I still retain after an experience warranted to break a less highly tempered bond of union. The other was that of a patient with an upper denture for an edentulous jaw, the plate teeth of which "dropped off" without the least provocation. The teeth were duly replaced, but that patient considered I had been careless of her interests, and carried her good will and her fees to another practitioner. We had some correspondence on the matter, but her conviction remained unshaken that I had been dishonest in that I used teeth of unreliable and inferior manufacture for her case. I suppose now that I have drawn attention to this matter, other practitioners will place their experiences on record; but except from my friend, Mr. Murray, I have never heard how very mortifying such a technical defect can be to the practitioner. I am afraid I cannot offer you any remedy, except that we should demand from the manufacturers of such unreliable goods a new tooth for a defective one, and without any payment. Were I a manufacturer I would rigorously test all the wire used for pins, and if a sample of this adulterated platinum should come under notice promptly return it on the dealer's hands. The accident to the pin of the continuous-gum tooth, and to the vulcanite molar, clearly shows that it is not caused by *soldering*. I have been watching the soldering of plate teeth for years. I have soldered hundreds of them myself, but I never met with such a defect before. Perhaps our members to-night will tell us how they have fared.—*Journal of British Dental Association*, *January*, *1897*.

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BRIDGE SO CONSTRUCTED THAT THE PORCELAIN CAN BE REPLACED. By Dr. A. L. De Vilbiss, Decatur, Ind. Back the tooth with 28-gauge gold, pure gold is preferable, and allow the gold to extend from one to three lines above the pins, as the case may require; bring down to the cutting edge of the tooth, first grinding the tooth to the desired shape. I always use the teeth with the pins crosswise, not bending the pins. The tooth is put in place with base-plate wax. If you wish to use a bicuspid or molar you will back in the same way; then swage cusps to fit backing, allowing the cusps to extend a little over the porcelain. After the teeth are in place and properly articulated, you will remove the porcelain with a thin pointed instrument. In the holes you will place lead points, the same as used in pencils (nineteen wire gauge), letting them extend out a little. Cover the backing with stove polish with a hair brush. You are now ready to invest in the usual way, bringing it well up over the cusps, if you have them in the bridge. Wash out the wax, work a little borax down between the backing and the cusps by dropping the powder in and tapping the case with a little instrument, then blow the surplus out. Solder in the usual way. The solder will flow around the carbon pins, and as soon as cold you can dress and remove the carbon pins with a small drill. Put your teeth in place and after they are all carefully adjusted remove again, counter-sink the holes in back of bridge. Cement all of the teeth in place with good cement. You can pinch the ends of the pins together. Then place the bridge in plaster, leaving the pins exposed; after the plaster hardens, rivet. Remove from plaster and finish.—*Ohio Dental Journal, January, 1897.*

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TWO CASES OF DISEASED MAXILLARY SINUS. By W. H. Todd, D.D.S., Columbus, O. Among a number of cases sent to me by one of our leading surgeons are two of which I wish to speak. The first one, a gentleman, was directed to come to Columbus to be treated for what he supposed might be a cancerous tumor. The surgeon sent him to me to make an examination of his mouth. I found a number of ordinary cavities to be filled, the right superior first molar gone which, he said, had been extracted in February, about the time he began to suffer, and it was in July when I saw him. From the socket, which had not healed up, as usual, there was an ugly-looking spongy tumor or fungus growth which had grown down so that it hid from view the second molar and protruded into the mouth. In probing I found that with very little difficulty I could go into the maxillary sinus, causing a discharge of pus. I began by dissecting this tumor and syringing with warm water containing a few drops of carbolic acid until I had gotten rid of the growth, when I found the opening in the antrum as large around as a lead pencil; the cause of all the trouble was then apparent. In extracting the tooth one root had been broken off and found its way into the antrum, where it remained until it was washed out. In a week the gentleman returned home with the antrum trouble on the road to recovery and the other teeth filled.

The second case, a lady, was advised to consult with me; in this case there was no swelling and the teeth were apparently in good condition. She said she had suffered about four months and had lost from forty to fifty pounds in weight. All this time there was a dropping of pus into the pharynx from the nasal fossæ, which had been syringed and treated, but without success. The last dental work that had been done was the right superior second molar, with a very nice looking amalgam filling, which she said had been put in without pain, a short time before her trouble began. I took the filling out and found the decayed dentin had not been removed, and the pulp, still in the canal, in a decomposed condition. I extracted the tooth and opened up into the antrum and found it full of a dark, nauseating pus. I syringed out and treated, and at the end of ten days the case was dismissed as cured.—*Ohio Dent. Jour., Jan., 1897.*

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NECROSIS FOLLOWING CHRONIC ABSCESS. By W. D. Snyder, D.D.S., Sidney, O. In the latter part of December, 1892, a case of what was supposed to be chronic abscess of the superior incisors was referred to me for examination and treatment. Patient, healthy man of about middle age. Occupation, farmer. Upon inquiry, I was given about the following history of the case: Some six or eight months previous the centrals and laterals had been filled with gold. From some cause the teeth became very sore and ultimately abscessed. The patient returned to his dentist for treatment, when the right central was extracted and others treated, but without success, so far as the getting rid of the abscess or flow of pus from the gums. This condition kept up during the summer and fall of 1892. When the patient presented himself to me, upon examination I found the following conditions: Labial aspect of that portion of gum extending from left central to right bicuspid not swollen but very much thickened, of a deep red, almost purplish color, with pus oozing from two or more fistulous openings.

I at once diagnosed the case as containing dead bone, but supposed the disease had not extended farther than the alveoli, but upon injecting permanganate solution found it passed through the floor and into the nose. Finding the right lateral very much involved, and wishing to get free access to the seat of the disease, I extracted it and was thus enabled to force my washes through this channel to almost all parts of the diseased territory. For cleansing and correcting the offensive odor I thoroughly washed the diseased part with lukewarm water and peroxid of hydrogen, following this with permanganate solution of about 4 or 5 grains to ½ oz. of water. As a stimulant and agent to assist in throwing off the sequestrum I used the following wash: Aromatic sulfuric acid, 2 drams; tr. capsicum, 10 grains; aqua, 2 drams. This treatment was kept up until pus almost ceased to flow, and the jagged points of bone could be perceptibly felt through the gums, when an incision was made and the sequestrum removed, after which antiseptic washes were employed until the wound had quite healed and all signs of inflammation had disappeared.—*Ohio Dent. Jour., January, 1897.*

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SMOOTH-POINTED PLUGGERS. By C. G. Myers, D.D.S., Cleveland. Read at Ohio State Dental Society, December, 1896. About five years ago I discarded serrated pluggers and began using those with smooth points. The idea was original with me, as I had never heard of them being used. Being a constant reader of most of the leading dental journals, I was surprised to find nothing in them on this subject. I have also quite a large acquaintance among dentists in almost all parts of this country and with all my questioning I have yet to find the first who is using smooth-pointed pluggers. It is only within the past month that I have heard that a number of years ago they were used and that articles concerning them appeared in the dental journals. My first object in presenting this paper was that it was something new, but now it is presented with the idea of finding out wherein lies the fault in these instruments which I have apparently used with such great success. When I was in college, ten years ago, the pluggers we were taught to use had deep serrations and some of the leading cohesive foil operators advocated them. In late years the tendency seems to be toward shallow serrations. Dr. Ottolengui recommends the point of a broken instrument, where we have only the roughness of the grain of the steel. The advantages I claim for the smooth over the serrated pluggers are these: Closer adaptation to the walls and margins of the cavity; greater density of filling, which is apparent in finishing or polishing, and the greater ease with which we can work the gold in narrow or contracted spaces. For the benefit of those who have not used the smooth points, I would say I use those having a broad point and a contracted shank, or those of the club-foot variety. The points are bright and tempered very hard, and are kept bright by rubbing from time to time on a piece of sole leather. They cannot be used with hand-pressure. The question is often asked me if these pluggers are applicable to contour as well as flush fillings. They certainly are; in fact I know of no limit to the contour I would attempt with them. Cohesive gold has the property of being welded one piece with another, and it makes no difference whether we use deep or shallow serrations, or whether we use clean burnished points. In fact I claim that the serrations are a disadvantage rather than an advantage.—*Ohio Dental Journal, January, 1897.*

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PHYSIOLOGICAL CURE OF DENTAL CARIES FROM CLINICAL OBSERVATION. By Dr. H. C. Register, Philadelphia. Read before Pennsylvania State Dental Society, 1896. Dr. Black, in his recent investigations as to density, percentage of lime-salts, strength, etc., occurring in the human teeth, has caused the displacement of the rudder in the dental ship while under full sail, and many of us are flopping in the wind and may drift upon the rocks of professional disaster if we let go the sheet altogether and base our practice upon the theory that a formed tooth, as first erupted, will accept a gold filling of the higher specific gravity as readily as it will in later life. And yet his experiments are conclusive so far as they go and must stand as demonstrated facts.

Dr. Truman says of Dr. Black's great work: "Any attempt to express for or against the work of anyone, when this has been based on actual investigation, would not only be valueless but the height of folly;" and, continuing, "Viewed in any light, the labor of this very able worker in untrodden fields must be held to be most painstaking and thorough;" observing, however, "The controversy between 'soft teeth' and 'dense teeth' has not been settled by these investigations."

The color of the teeth, heretofore serving as a guide in determining their structural density and liability to carious attack, is set aside as fallacious, as shown by Dr. Black's tables, as he found in the percentage of lime-salts in all teeth so slight a variation that it ceases to be the conditional cause why some teeth decay rapidly and others do not. He particularly calls attention "to the immediate practical value of the general habit of the profession to regard teeth that are seen to be decaying rapidly as soft teeth, teeth that are poorly calcified and will eventually be lost on account of their poor quality, to be erroneous, it being a demonstrated error that teeth which decay rapidly are as well calcified, strong, and dense as teeth in which no decay appears ; it being emphatically not a difference of the percentage of calcium salts in teeth which constitutes the basis of the difference of their susceptibility to caries ;" going on to say that teeth which decay rapidly are sufficiently hard for any kind of filling-operations, demanding the highest and best judgment in mechanical treatment instead of substituting something that is easily done.

From clinical observation, Dr. Black is undoubtedly correct in regard to color having no weight in indicating variations in structure; lime-salts, with water and pigment, probably giving an animated expression. The color and shade being a unit in the harmony of temperament, temperament and color, clinically, make no distinction in liability to caries. The simple question involved is, Are young teeth as well served by dense gold fillings as by those of less specific gravity, depending upon adaptation, or, in other words, protection until the hardening process is perfected, which we find to be so potent and manifest from clinical observation, it being the essential means and object sought for in the physiological cure for caries?

Dr. Black, in his recent experiments, finds that man living upon "natural food would be able to close his jaws with a force of 300 pounds, whereas in a civilized state and depending upon artificial preparation of foods, the amount of stress that would be borne by the individual tooth without severe pain or injury is reduced to one hundred pounds or less in a state of apparent health." This condition is undoubtedly in harmony with clinical observation, as noted in bringing into use teeth that have been disarticulated for a time—how little pressure will produce pain in the peridental membrane; and in an inverse way, how the undue pressure upon carrying one end of a bridge will cause absorption of the root.

Dr. Black admits that these investigations do not clear up the mystery which still prevents an explanation of the reason "why some people are very susceptible to caries, others less so, and still others immune;" but they do clear up a grave misconception as to the influence of differences in the per cent of basic matter as a factor in caries; for heretofore it has been thought, in the dental profession, that the relative susceptibility of tooth-structure to caries was attributable to these differences in the percentages of lime-salts they contain. Now we know this to be fallacious.

These surprises to the profession are continued in connection with Dr. Williams' recent investigations on the formation of enamel, in which he treats that part of the tooth as a petrified dermal appendage, absolutely lifeless and unchangeable, in contradistinction to the theory of its being a connective-tissue product, related in some way with continued life-stimulus. He says, "Enamel is a solid mineral substance, and the finest lenses reveal not the slightest difference between the enamel ground moist from a living tooth and that which has laid in the earth a hundred centuries." If this be absolutely true, accepting that the filtration of water from the dentin has no influence upon enamel in holding nutrient matter, it must influence us in our work. This, with Miller's great work in showing the active cause of caries to be local, does not wholly explain the predisposition to points of attack where no local factor resides, also the coincidence of teeth decaying on opposite sides of the mouth in the same positions; both ripe questions which cannot be ignored.

These conditions and the deductions drawn from clinical observations point to some constitutional influence, as Dr. Gerhart so suggestively pointed out in his strong paper read last year, that "The etiology of caries has its conception in the negative fact which obtains as a consequence of diminished touch, resulting from changed environment brought about by a change in the physical characteristics of food, this condition exercising an influence by diminishing the activity of the physiological process which gave the previous deterrent power to the dental tissues."

Local conditions do not explain the facts. Temperamental conditions show no variation in the susceptibility to attacks, predisposition, or the susceptibility of tissues obviously being underlaid by some constitutional dyscrasia that leads to a local lesion by permitting microorganisms to find a proper habitat and bring about tooth-destruction.

Dr. Williams says, "The teeth which contain little or no organic matter often decay rapidly. The teeth of many animals and fishes containing a large proportion of organic matter rarely or never decay, which indicates that the presence or non-presence of organic matter is not an important factor in the phenomena of dental caries.''

The investigations of Drs. Miller and Black on the subject must be ranked as the most important ever made. Dr. Williams, however, accepts the liability of the human teeth to caries as absolutely due to environing conditions and not to inherent structure, saying ''that no tooth will decay if its environment be healthy, and no tooth can resist decay if its environment be 'unhealthy,'—unhealthy meaning such particular external conditions as are inimical to the preservation of the tooth.'' This does not hold good absolutely, clinically, and he falls back upon the assertion that it would be going too far to claim that tooth-structure had no relation to caries; ''but even such a statement would be nearer the truth than the position occupied to-day by a large majority of the dental profession.''

Are we not applying in methods of practice much that is drawn from clinical deductions that cannot be reasoned out, and yet appears to be correct? Just as Robertson inferred from observation, half a century before the science of ''bacteriology'' existed, that the active cause of caries was an acid; as scientifically shown by Miller in his great work that microorganisms are the active agents in forming an acid. Acid alone does not produce caries, though it may enter largely into erosions and gouty conditions; which, however, have no place in this paper.

No less surprising are Dr. Black's experiments with gold, showing the teeth are always harder than gold can be made; and while he lays much stress upon the physical or cohesive properties in making fillings dense and hard, adaptation takes precedence of all else, for he says, ''no matter what the density or strength, in performing the operation this must be the first count,'' which is borne out by clinical observation.

Dr. Custer has found cohesion to be developed at a much lower degree of heat than is generally supposed, saying it may be so low that gold may be subjected to it for days without injury and still be highly cohesive.

From clinical observation teeth are saved or lost under gold manipulation in degree as the physical property of gold is appreciated. In an indiscriminate selection of fillings by myself and taken from records, carefully kept since 1883, I find the following results :

		Average.	Longest Service.	Doing Service.
Gold	335 fillings	7.73 yrs.	12 yrs. 10 mo.	178
Globe alloy	176 "	5.18 "	12 " 7 "	10
Rogers' alloy	126 "	4.9 "	10 " 5 "	2
Welsh alloy	151 "	4.5 "	11 " 9 "	18
Gutta-percha	173 "	3.07 "	10 " 3 "	46
Phosphate zinc	182 "	2.8 "	12 " 3 "	50

This collection of figures representing the life of these fillings, if added to those doing service, would probably make the gold fillings average nine years, alloy eight years, and gutta-percha and phosphate of zinc three years. It is presented to show the transient influence of fillings generally. While gold stands at the head of the list, and though considering it the best material for filling teeth where indicated, there are so many different methods in its use that it really remains an open question.

It had been my intention, in preparing this paper, to show by tabulated records how the several materials generally used for filling teeth differed in causing secondary dentin to form under a filling through influence of manipulating the material; but the investigation of the charted record was taken up too late, it proving to be a much larger work than was at first supposed. This short table is not intended to show that any one material is better than another; but it had been my intention to see what difference, if any, existed between these, which are the results of methods usually pursued, and those I have made general in my practice during the last half-decade.—*Dental Cosmos, January, 1897.*

AMOUNT OF GOLD USED.—In answer to a query I received the statement from Morgan, Hastings & Co. that annually there are used in the United States 30,000 ounces of gold for filling teeth, which is a very conservative estimate.—*F. J. Fesler.*

ANESTHESIA DURING SLEEP.—It does seem to me that chloroform may be administered during normal sleep, to the degree of perfect anesthesia, without arousing the sleeper, more frequently than we believe.—*Israel Cleaver.*

I operated upon a little girl who had been run over by a trolley car. We went to the house at 10 p. m. and found the child asleep. We gave chloroform and amputated two toes. The child awoke later and knew nothing about the operation.—*Longaker.*

One element of danger is that in many persons during sleep the vitality is at much lower ebb than during waking hours, and a fatal termination might result.—*Burr. In Med. Record.*

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Editorial.

RECENT IMPROVEMENTS IN FILLING TEETH.

On page 63 we publish in full the paper of Dr. G. V. Black read at the anniversary meeting of the Chicago Dental Society, February 1 and 2.

The subject of the paper, as announced on the program, "Recent Improvements in Filling Teeth," but faintly indicates its nature. The question of the anatomical relations of the teeth to each other and to surrounding parts, the physical characteristics of the teeth and their ability to withstand stress, the cause and nature of dental caries, the plan of manipulation and the material to be used in filling teeth—all of these are therein discussed. Furthermore, a cause is given for the loss of teeth from destruction of the sockets (pyorrhea).

Although the essayist raises four or five of the most important questions connected with dentistry for discussion, the chief point of his paper relates to the treatment of the proximal surfaces. He advocates contouring the interproximal space when there is a disposition of the proximal surfaces of the teeth to caries. That is, he advises cutting away the entire proximal surface of tooth substance clear to the free margin of the gum; the buccal and lingual surfaces also are to be cut away sufficiently to place the line of margin so it will be constantly cleansed by the food in process of mastication, and the parts thus removed are to be restored with cohesive gold, contouring sufficiently to protect the interproximal space, and so shaping that the excursions of food will keep the surface clean. This method, when properly carried out, will prevent recurrence of decay of the proximal surfaces more surely than any other, but think what it means in the majority of cases to adopt such extreme measures, both from the standpoint of patient and operator. The preparation of cavities, filling and finishing of filling, when conscientiously performed, must consume from four to six hours of time, independent of that taken in securing the necessary space, besides requiring an amount of skill and good judgment not possessed by the majority of operators. We should say that, except in extreme cases, it would be more rational, after removing the decayed portions, to cut away only so much of the tooth substance as would allow us to anchor the filling properly. There are several reasons for this, the first being that but a small number of those requiring the services of a dentist could afford to pay for such operations as advocated by the essayist.

Furthermore, if the perfect contour is restored we get all the advantages, both as to comfort of chewing and cleansing of the surfaces by excursions of food, without making the entire proximal surface of gold. Then, in accordance with the theory of self-cleansing, by restoring perfectly the part destroyed the most dangerous portion is protected by the filling. We quite agree with the essayist that the more of the tooth surface you cover with gold, the less chance there is for new cavities to form, but we should adopt the course he advocates—removing unaffected tooth substance and always obtaining perfect contour—only in the most extreme cases.

In making this proposition we have in mind the fact that decay will recur when the teeth are not well taken care of, if the influences which cause caries to progress are still present, and decay is more likely to recur on the proximal surfaces than on any other portion of the tooth. But if the patient has been well trained by the dentist in caring for the teeth, decay is not likely to recur, and the conditions inducing decay often disappear in part or altogether. If, on the other hand, this tendency to decay is very great it will attack other portions of the tooth which are not covered with gold, besides the proximal surfaces. And this suggests the question why teeth decay so much more in some mouths than in others, or in the same mouth at different periods? And why the enamel of teeth disappear when there is no "agglutinating substance," in the condition we call erosion.

The work of Dr. J. L. Williams, referred to at length by Dr. Black, will be appreciated by microscopists, but it did not impress us as being so new or extraordinary, for we had supposed the beginning of decay on the proximal surfaces of the teeth was much the same as its beginning elsewhere, and that it was generally believed to be produced by microorganisms of the mouth. And from careful observation at the chair for a period of twenty odd years we have many times been surprised at places where there was apparently but a slight change in the color of the enamel of the tooth, which revealed, after careful examination, a destruction of the tooth substance amounting to a deep cavity. Our way of accounting for this is that the force and friction usually exerted on other affected surfaces is not nearly so great on the proximal surfaces, hence the partially disintegrated tooth substance is not broken down so quickly at these points of attack. But we will have more to say on this subject in a series of articles we purpose furnishing our readers, under the title of "Diagnosis and Treatment."

The discussion of Dr. Black's paper did not take the wide range that it merited, the different speakers, as is often the case, drifting into details of manipulation, and there were so many strangers present whom all desired to hear that we gave way and did not discuss the paper at the meeting. For this reason we have dwelt at some length on these very important questions, feeling that there are no more important ones in the whole range of dentistry. We have seldom heard a paper which suggested so many lines of thought, and the proper care of the proximal surfaces of the teeth being the most important and difficult problem in the practice of dentistry, this paper must result in great good. We commend the study of it to our readers and solicit opinions and criticism for our columns.

News Summary.

FENNEL OIL in dose of five to ten drops, twice daily, is reported to be efficacious in whooping-cough.—*Medical Record.*

TO RENT—To a dentist—Elegant rooms in suite 1002 Champlain building, in company with a physician; rent $32.50 per month.

THE STOMATOLOGIST.—We are glad to welcome to our ranks *The Stomatologist*, a new and bright monthly journal published by the Alumni Association of the Philadelphia Dental College.

VULCANIZER EXPLODED.—The Sibley, Iowa, paper of December 12 reports that the explosion of a vulcanizer in the dental rooms of William Schlawig fatally injured the dentist's wife. The head of the vulcanizer struck her in the forehead, fracturing her skull.

TO KEEP SPITTOON CLEAN.—Mr. A. W. Wright, Jr., of London, finds that a little sulphate of copper sprinkled inside the spittoon (metal or earthenware) before the day's operations commence, prevents any unpleasant odor, does not allow the interior of the spittoon to become furred, and renders it much easier to cleanse than usual.—*Ash's Circular.*

Ivy Poisoning.—A case of complete and immediate relief from the effects of ivy poisoning is reported in the *Medical World* by Dr. W. L. Shanks. His patient was swollen from head to foot, and in an hour after bathing in a solution of sodium hyposulfid was attending to business as if nothing had happened.

Lockjaw Caused by a Tooth.—Dr. Sache (*Centralbl f. Chir.*, 1896, No. 40) reports a case of lockjaw which for four years baffled the skill of several physicians. Dr. Sache found the right superior third molar projected externally in a horizontal direction pressing against the internal pterygoid muscle so that the patient was unable to open his mouth. Eight weeks after extraction of tooth patient could open jaws normally.

Defective Teeth and Cataract—Several cases reported with double zonular cataracts and teeth presenting marks due to arrest of development. Attention may be drawn to the close analogy between the development of the crystalline lens and that of a tooth. Any cause interfering with the growth of the lens, or of a tooth, might produce the peculiar zonular cataract in the one, and the defects in the enamel of the other, which had been variously assigned to the action of convulsions, rickets, or mercury.—*Dental Record.*

Death from Dentition.—The *Cambridge Chronicle* for December 24 contains a notice of an inquest held respecting the death of a child, aged 15 months, due, according to the evidence of the medical man, to dentition. The facts of the case are briefly as follows: The mother noticed that the child became ill on the previous Saturday, and as the symptoms continued to become worse she went for the doctor on Tuesday, but the child died before she returned. The medical man in his evidence stated the post-mortem examination showed that the child had been well nourished and that all the organs were particularly healthy. Teething had set up irritation of the gums and caused convulsions, from which the child died. He stated that medical assistance should have been called in earlier, for if the gums had been lanced in the afternoon the child's life might probably have been saved. —*Jour. Brit. Dent. Assn.*

Congenital Teeth.—By J. Q. Allen, M.D., Montrose, Colo.—From the time of the deformed Richard to the present this condition has been looked upon as an ill omen, and the midwives inform us that a child so born is sure to die within a few months. I hope to be able to prove the contrary. On January 12 last my wife gave birth to a nine-pound girl baby—our first. The child was well developed and normal in every way with the exception of having two lower incisors. Within two months these teeth turned black and seemed about to decay but never became loose. After a time they cleared up and now look like ordinary teeth. She began to walk at ten months and is now, at a little more than eleven months, well nourished, weighing twenty-two pounds, and runs all about the house. She has recently cut one upper incisor. These cases are interesting, and I would like to know if there are ever more than the two usual sets of teeth, or will these congenital teeth be the ordinary temporary set.—*Medical Record.*

An Unheard-of Thing.—Doctor (to messenger boy)—So yo' mummer say ez what the yarbs ain' done her no good? Wait er minnit (consults book). "Yi! I thought so! Ask yo' mummer how she spec de yarb do good when de bill ain' paid?—*Harper's Bazar.*

Newly Discovered Constituent of the Blood.—Dr. Muller, of Vienna, has described certain particles found in the blood under the name of hæmokocia (blood dust). They resemble fat globules and the largest are 1-25000 of an inch in diameter. They are motile and are unaffected by osmic acid.—*Am. Micro. Journal.*

Hallucination and Anesthetics.—In the case of State vs. Perry, the Supreme Court of Appeals of West Virginia held that expert medical testimony should determine whether or not hallucination, while under the influence of an anesthetic, was responsible for criminal charges preferred against a physician by a female patient. If a probability of such hallucination is established, and the charges rest entirely on uncorroborated testimony of the patient, the jury, it held, should acquit the accused.

Notices.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The Illinois State Board of Dental Examiners will meet Monday, March 29, 1897, at Chicago, for the purpose of examining candidates and transacting other business. All persons intending to appear before the board at that time should notify the secretary not later than March 15.

L. L. Davis, Secretary.
1303 Columbus Memorial Building.

EASTERN ILLINOIS DENTAL SOCIETY.

The eleventh annual meeting of this society will be held at Mattoon, Ill., on Tuesday and Wednesday, March 16 and 17, 1897. A cordial invitation is extended to the profession to attend. The officers are: President, Dr. I. A. Lumpkin, Mattoon; Vice-President, Dr. E. E. Kimel, Bement; Treasurer, Dr. S. A. Cambell, Mattoon; Secretary, Dr. F. M. Conkey, Homer; Librarian, Dr. O. T. Eddy, Decatur; Supervisor of Clinics, Dr. W. A. Hoven, Gibson; Executive Committee, Drs. Cambell, Dameron and Conrad.

CENTRAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of the Central Dental Association of Northern New Jersey, held February 15, 1897, the following officers were elected for 1897-98: President, Dr. William L. Fish, Newark; Vice-President, Dr. F. Edsall Riley, Newark; Treasurer, Dr. Charles A. Meeker, Newark; Secretary, Dr. Herbert S. Sutphen, Newark. Executive Committee, Dr. George E. Adams, South Orange; Dr. W. E. Truex, Freehold; Dr. C. S. Hardy, Summit; Dr. F. S. Gregory, Newark; Dr. Fred C. Barlow, Chairman, Jersey City.

H. S. Sutphen, Secretary.

STREATOR PROFESSIONAL FELLOWSHIP CLUB.

There is no reason why the dentists living in small towns should not be on the most friendly terms. At Streator, Ill., the dentists have just organized the following society.

Basis of membership in the Streator Professional Fellowship Club: With the desire for mutual benefit and professional fellowship, and to help each other in all worthy ways—in intellectual, ethical and professional culture—the undersigned have associated themselves in a professional fellowship club. The officers shall be a president, vice-president, secretary and treasurer, whose duties shall be the same as those usually borne by such officers. Meetings shall be held from time to time as the members desire. The officers and members are: Dr. J. A. Curry, President; Dr. T. F. Henry, Vice-President; Dr. D. Davison, Secretary and Treasurer; Dr. F. O. Finley and Dr. C. R. Taylor.

The first meeting of the club will be held Thursday evening, March 4, 1897, and the president will read a paper on some practical subject for discussion. This club hopes to reach the dentists in the neighboring towns, where there are only one or two, and thus cultivate good fellowship and professional rectitude. This effort should meet with the hearty approval of the profession.

LIST OF LATEST DENTAL PATENTS.

575,684. James Baxter, Fort Wayne, Ind. Dental Chair.
575,894. James E. Keefe, Chicago, Ill. Dental Clamp.
575,750. George H. Winkler, New York City. Dental Tool.
576,089. Amenzo H. Butterfield, Stamford, N.Y. Dental Engine.
576.518. Elisha D. Hinkley, Denver, Colo. Dental Rubber-Dam Holder.
576,142. Daniel Murlless, Holyoke, Mass. Rubber-Dam Clamp.
576,471. Frank Ritter, Rochester, N. Y. Dental Chair.
576,722. William Caille, Jr., New York City. Tool-Moistening Device for Dental Handpieces.
576,593. Howard S. Lowry, Kansas City, Mo. Dental Appliance.
577,254. Harry E. Hawksworth, Philadelphia, Pa. Means for Raising or Lowering Dental Chairs.
577,063. Johannes T. Pedersen, Woodside, N. Y. Dental Handpiece.
577,064. Johannes T. Pedersen, Woodside, N. Y. Slip-joint for Dental Handpieces.

Obituary.

DR. E. L. CHILDS.

Dr. E. L. Childs died at Conway, Mass., May 27, 1896, of cancer of the mesentery. He was a native of Massachusetts and studied dentistry with Dr. E. Lincoln Clark, now of Dubuque, Iowa. He commenced practice in Pittsfield, Mass., and subsequently removed to Brooklyn, N. Y., and again to Nebraska, when failing health compelled a return to his former home in New England among the mountains of Conway, Mass.

Dr. Childs was well known to many in the profession, particularly in Brooklyn, where he practiced many years. He was one of the original members of the Brooklyn Dental Society and was unusually active in all that could increase its usefulness. He, with others, enjoyed the satisfaction of knowing that it ranked at least equal to any local society at that period.

Dr. Childs adds to the large number of those who will no longer greet us at our society gatherings. Thirty-six years have passed since we first met him, and we vividly recall his willingness to aid every movement for the development of society interest in Brooklyn. That city owes much of its advancement in professional affairs to the influence of this society, and we wish to accord to the memory of Dr. Childs the share he had in it with ourselves.

G. ALDEN MILLS.

DR. GEORGE C. BROWN.

The following resolutions were passed at a special meeting of the New Jersey State Dental Society, Friday evening, February 5, 1897, at Newark:

Whereas, It has pleased Almighty God to remove suddenly from the midst of his active labors our fellow-member and treasurer, Dr. George C. Brown;

Resolved, That the members of this society hereby desire to place upon record their high appreciation of his manly Christian character, and of his high professional standing, as well as his genial and pleasant presence;

Resolved, That we mourn his death as a personal as well as professional loss, and hereby desire to testify to our high appreciation of the efforts he always and at all times gave to the profession of his adoption, and his devoted activity to the advancement of its welfare;

Resolved, That we mourn with his afflicted family and extend to them in this hour of trial our sympathies; and

Resolved. That a copy of these resolutions be sent to his family, and be placed upon the minutes of our society, and be published in the journals devoted to dentistry.

Committee { C. S. STOCKTON,
F. C. BARLOW,
J. ALLEN OSMUN, Chairman.

DR. FRANCIS PEABODY.

Dr. Francis Peabody died at 3 a. m., January 30, 1897, at Fort Myers, Fla., where he had gone to try and regain his health, which had been failing for some time. The remains were taken to Cincinnati for cremation. Dr. Peabody was born in Boston, January 22, 1833. He came to Louisville while yet a young man and began the study of dentistry with his uncle, Dr. W. H. Goddard, who was one of Louisville's distinguished dentists in the early days. After studying with his uncle for some time he went to Cincinnati and graduated in his profession from the Ohio Dental College.

He married before the war and went to Tennessee with his wife and two children. During the war he lived near Nashville, and while he took no part on either side, he sympathized with the lost cause. When the Union troops invested the town in which he lived he was suspected of being a Confederate spy and thrown into military prison. The authorities were quick to learn his innocence and he was released with all due amends. His wife and little boy died shortly afterwards, so Dr. Peabody returned to Boston with his little girl, whom he gave into the care of his sister. She is still living there.

Then Dr. Peabody returned to Louisville and again began the practice of his profession with his uncle. He remained there until 1871, when he went to Brazil and practiced his profession in Rio Janiero. He again returned to Louisville and remained there until his death. In 1882 he married Miss Nannie E. Williams, who, with two children, survives him.

Dr. Peabody was perhaps one of the best-known dentists in Kentucky. He was elected to the faculty of the Louisville College of Dentistry in 1888 and had been president of that institution about six years. He had been the president of the Kentucky State Dental Association and chairman of the board of censors, both very distinguished honors. He was a member of the National Association of Dental Faculties, American Dental Association, Southern Dental Association and Mississippi Valley Dental Association. He was one of the first to join the Dental Protective Association and he aided its work whenever possible. He was elected president of the Falls City Dental Club last year. He was an enthusiastic student and able teacher and a practitioner of rare skill and ability.

At the Louisville College of Dentistry and the Hospital College of Medicine a committee was appointed to draft suitable resolutions. Following is the action of the committee:

Professor Peabody was the champion of many advances in the dental education within the period of his professional career. He always insisted upon the intimate relation of dentistry to the profession of medicine, and maintained that the ethics of the medical profession necessarily included the profession of dentistry. He was an enthusiastic student and able teacher and a practitioner of rare skill and ability.

Resolved, That we deeply deplore his death and feel keenly the loss of his wise counsel, and the great loss of his services to this college.

Resolved, That in our judgment the dental profession has suffered the loss of one of its ablest members.

Resolved, That the college buildings be draped in mourning for thirty days, and that the buildings be closed on the day of the funeral.

Resolved, That a committee communicate with the family of the deceased and make suitable preparations for receiving the remains on arrival at the depot and aid in the arrangements for the funeral.

Resolved, That the joint faculties and students attend the funeral in a body.

Resolved, That we tender to the family of the deceased colleague our profound sympathy and condolence.

Resolved, That a copy of this action be furnished the family of the deceased, and that it be made a part of our permanent records.

Resolved, That a copy be furnished the press for publication.

EDWARD M. KETTIG,
JOHN A. LARRABEE,
HENRY B. TILESTON, } Committee.
THOMAS HUNT STUCKY,
DUDLEY S. REYNOLDS.

The Dental Digest.

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Original Contributions.

REPLY TO EDITORIAL COMMENT.

By G. V. Black, M.D., D.D.S., Sc.D.

In the February, 1897, issue of The Dental Digest appears an editorial comment upon a paper which I presented to the clinic of the Chicago Dental Society on the first of the same month. The paper also appears in full in the same issue. Some points in this editorial seem to me to merit attention.

First, I may say that the kindly tone of the criticisms made is fully appreciated, and I thoroughly believe in the importance of a full consideration of the points that were presented and which is also voiced in the comment to which I refer.

The especial point to which objection is made is thus stated—nearly correctly: "He advises cutting away the entire proximal surface of tooth substance clear to the free margin of the gum; the buccal and lingual surfaces (walls of cavities) also are to be cut away sufficiently to place the line of margin so it will be constantly cleansed by the food in process of mastication, and the parts thus removed are to be restored with cohesive gold, contouring sufficiently to protect the interproximate space, and so shaping that the excursions of food will keep the surface clean."

This I should amend by the use of the words *margins of the filling* in place of the word *surface* in the last line, recognizing that to keep the whole surface clean is impracticable by any method now within our power.

The editor then adds: "This method, when properly carried out, will prevent recurrence of decay in proximal surfaces more surely than any other," and in the same sentence hastens to object to the use of this more sure method in these words, "but think what it means in the majority of cases to adopt such extreme measures, both from the standpoint of the patient and operator,'' and states that ''The preparation of cavities, filling and finishing of filling, when conscientiously performed, must consume from four to six hours of time, independent of that taken in securing the necessary space, besides requiring an amount of skill and good judgment not possessed by the majority of operators.''

I wish to say in advance that I fully recognize that the dentist must often operate under conditions which limit his effectiveness, or conditions which cause him to plan a different operation from the one which would be regarded as desirable and best under favorable conditions. But while this is true, we are not justified in the statement that the plan which is the best, or in which recurrence of decay is least likely to occur, is to be reserved for *extreme cases*, and that a more rational course would be to adopt as the general rule something supposed to be easier, that is, ''after removing the decayed portions, to remove only so much of the tooth substance as would allow us to anchor the filling properly.'' The plans of operating which furnish the greatest safeguard against recurrence of decay are the best, and, being the best, our patients have a right to them, and have a right to the assurance that these plans are the rule of our practice, and that they be not departed from except for good and sufficient reasons particularly applicable to the case in hand.

The objection as to the time required to make fillings in the manner indicated seems to me to be very much overstated—that is, from four to six hours. For many years it has been a rule of practice with me to limit sittings of patients to two hours when possible, and not to allow more than three hours in the most extreme cases; yet I have had no difficulty in gaining space, preparing cavities, filling, and finishing fillings within that time on the plans indicated, except in a few extreme cases. In some of these certain portions of cavity preparation has been done at a previous sitting, or the finishing deferred to a subsequent sitting. With children, and sometimes with adults who from any cause are unable to endure long sittings well, the operation is thus divided in order that they may have short sittings.

The improvements in the detail of cavity preparation and of finishing lightens and shortens this part of the labor very materially.

Bold cutting upon definite lines is something quite different from *feeling one's way* to possible sound margins, and is done in much less time and with less worry of the patient. The better shape of cavity facilitates rapid packing of gold, and the abandonment of file-cut finishing instruments for thread saws and cutting instruments makes trimming to shape comparatively easy and rapid. These are, of course, matters of detail that cannot now be discussed *in extenso*.

As to the price to patients, it is the old adage, "The best is the cheapest," intensified. The dentist may let his patient off this year with a less fee, only to double it later with the expense and worry of additional sittings. A limitation of fee will not pay a patient for a refilling.

The necessary limitations constantly met with, due to adverse conditions, which divert operations from the lines justly deemed best, are so many and so varied as to scarcely admit of discussion. We must have due regard for the disabilities of our patients, either young or old, and yet wise planning for their good will materially modify or set aside many of the seeming limitations that confront us.

When we can arrive at a safe basis for estimating the coming of immunity from caries in our patients, a thing we are now constantly noting as coming with advancing age, we may justly modify the width of cutting, or extension for prevention. Possibly even now some may be able to see in adults and middle-aged people the signs of coming immunity so clearly marked as to justify less vigorous extension. But the relapses are so frequent, and we have as yet so little accurate knowledge of the conditions governing such changes, that it seems to me impracticable to base plans of procedure upon any physical signs now apparent. If the editor of the DIGEST has reliable data upon this point he should give the profession the benefit of it without delay.

Touching the work of Dr. J. Leon Williams referred to, it is possible that my appreciation of its importance is somewhat keener than that of some others, for the reason that I struggled along that line of research in the past and had arrived at a point from which I could pretty clearly see the line of facts without being able to prove them. Dr. Williams has been more successful and I am much gratified. It may require years for the profession to fully appreciate its importance, as was the case with Miller's work, and is usually the case with any marked advance in dental science. Generally dentists fail for a time to see its relation to operative procedures. But this last advance, bearing directly upon the nature and conditions of the beginnings of caries in the enamel, is much more directly related to the means of prevention of the inception of caries and of the recurrence of caries after filling than any direct discovery of recent years. It gives us the conditions of the beginnings, or of the initiation of recurrence of caries in a nut-shell, and with it the key to prevention of recurrence after filling. Caries has its beginning under films of agglutinated microorganisms, clinging to the enamel or in pits and fissures, and nowhere else. It follows that if we can so place the lines of cavity margins that these will be continually swept away, and make a perfect filling, we will not have recurrence.

To protect the whole of the proximate surfaces does not seem possible by any method of artificial cleaning within my knowledge, though very much can be done to limit the number of decays.

LOCAL ANESTHETIC EFFECT OF EUCAIN HYDROCHLORATE.

By Theodore F. Chupein, D.D.S., Philadelphia.

This local anesthetic has given us great satisfaction in its use. We have been able to extract teeth painlessly with it, which we were never able to do with cocain. True, the frequent serious toxic effects of this latter drug ofttimes deterred us from its use; nevertheless we have on occasions used it, but always with misgivings. Eucain seems entirely free from these dangers, though injected in solutions of such strength as would be fatal with cocain. It produces thorough local anesthesia absolutely without toxic effect, so that the dentist may use it without the least misgiving. A solution of 15 per cent may be used, but a 10 per cent solution is quite sufficiently strong to obtain all the benumbing effect needed.

Eucain is furnished to the dentist as a white powder, inclosed in small vials of 1 gram (15 grains). To make a 10 per cent solution, dissolve the contents of one vial in 150 grams (2½ drachms) of sterilized water. Of this solution, which any dentist can make for himself, 5 to 10 drops are sufficient for a painless extraction; but one syringeful may be injected, one puncture on the inside and one on the outside of the tooth to be extracted. As many as twelve syringefuls may be and have been injected without producing any toxic effect whatever. To avoid the pain of the puncture, a little of the solution may be rubbed on the gum with the end of the forefinger.

We have been able to produce the "blanching" of the gum, as well as the "welt" or elevation on this tissue—the necessary sign of local anesthesia—with eucain, which we were never able to do with any of the solutions of cocain which have been suggested. It is our experience that unless the blanching as well as the welt are produced when the solution is injected, insensibility will *not* be obtained. The needle should be inserted as close to the alveolus as possible, and the forefinger of the left hand pressed on the gum as near the point of the syringe as possible. When the solution flows from the syringe with only slight pressure on the piston, the anesthetic effect will not be produced; it is only when considerable pressure is used on the piston that the obtunding effect is secured. It is better to make several punctures until this resistance to the injection is secured rather than make the attempt without securing the blanching and welt, for these are the invariable signs of insensibility. We have operated immediately after the injection is made, before the subsidence of the welt, but other operators have advised waiting one minute or more before doing this. In many cases we have made but *one puncture* and this on the outside. We do not extract many teeth, but have extracted with this agent more successfully than with any other local anesthetic.

It must not be considered that eucain is an infallible anesthetic—that is, it has not been so with our manipulation. Some teeth which we have extracted, even when the blanching and welt were induced by the injection, were reported by the patient "very painful," while others, where we had considerable trouble and used considerable force, and consumed considerable time to dislodge them, were reported by the patient as giving "absolutely no pain."

After the extraction it is well to press the gum over the puncture to force out any eucain that may be in the tissue. This, however, applies more especially where several teeth have been extracted and several punctures made.

In the use of the syringe we would recommend to blow through the little nozzle after each time it is used, and to grease one of the fine wires which are furnished with all hypodermic syringes and insert this wire into the minute tube; otherwise these tubes, being generally made of steel, would rust and thereby become useless.

Eucain hydrochlorate possesses about the same anesthetic power as cocain. It is not necessary to add any antiseptic to the eucain solution, as it does not deteriorate like cocain solutions, nevertheless we would advise that only such a quantity be made as would last one month.

The sole agents for eucain hydrochlorate in the United States are Schering & Glatz, 55 Maiden Lane, New York City.

UNION OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS.

By Thomas Fillebrown, M.D., D.M.D., Boston, Mass.

The American Dental Association was formed as a more perfect organization to succeed the American Dental Convention, which it soon supplanted.

The Southern Dental Association was organized to supply a need which can now be better met by one large truly national body.

Both associations have done good work, and each has supplied a want existing in the professional life of this nation.

Both have been practically local societies, though ostensibly national. The Southern has been limited by its name and its practice. The American has continued too much an Eastern institution, and has hardly kept pace with the march of progress. Its methods no longer serve its best interests; and there need be no surprise at the loud call that is heard for a reorganization and the adoption of methods that shall infuse new life into its councils.

The vital question to-day is, how to form and organize a society which shall be truly national, and serve the needs of the dental profession of this country.

The most natural course seems to be a union of the American and Southern Dental Associations in one strong, national society, with a constitution which protects all interests, invites the best efforts of all its members, and provides for progress and enlargement in the future.

The profession united in one national association will respect itself more than it can while divided, will be more influential at home, and thus be able to do more to elevate professional character, and make the influence of the dental profession in America more potent in all its relations with the world.

The social element is one of the most powerful forces for the progress of humanity, and this will be greatly strengthened by union. Only a few men feel able to afford the time, to say nothing of the expense, necessary to attend two series of meetings in one season, both serving the same end, hence under the present dual organization many are deprived of the satisfaction and benefit of personal acquaintance. In one association the members from the East, South and West will come together at regular periods, compare experiences, offer mutual suggestions, and enlarge, deepen and strengthen their personal relations. All those who were fortunate enough to attend the union meeting of the American and Southern associations in Louisville in 1888 realize how pleasant it is to dwell together in unity.

By union the importance of the state societies will be enhanced, as the meetings of the larger body in each section of the country will be less frequent, the leading men of each state will naturally interest themselves in their home societies and make their proceedings more valuable, and thus be more able auxiliaries to the national association.

In 1894, at Old Point Comfort, the American Dental Association appointed Thomas Fillebrown, J. Y. Crawford, Louis Jack, B. Holly Smith and J. N. Crouse a committee to promote the cause of union of the two associations, and invited the Southern Dental Association to appoint a like committee for the same purpose.

In response to the invitation the Southern, at its meeting in Atlanta in 1895, chose Drs. L. G. Noel, E. P. Beadles, J. T. Calvert, F. Peabody, and J. R. Knapp a committee to consider the subject with the committee of the American. These committees have sought to obtain a consensus of opinion as to the desirability of union and the essential points of a plan which would prove acceptable to the members of the associations, which would protect the interests of the minorities, and at the same time provide the best working plan at the present time possible.

At first considerable opposition to the movement was expressed. The opposition seemed based upon the fear that rights would be denied the minority, and also upon affection for the old associations.

As the matter has become better understood opinion has been more favorable to the movement. The votes of both associations, although not decisive, have invariably been favorable to a union.

A plan including the following provisions meets with quite general acceptance:

1. It seems desirable to take a new name, one distinctly national; just what it should be has not yet appeared. The committee invites suggestions from any member interested.

2. Divide the country into divisions, South, East and West, and meet alternately in each section. This will insure a meeting in each portion of the country every third year.

3. Organize the new association in sections the same as the American is now, but have the president (or executive committee) appoint chairmen known to be interested and competent to do the work. It is believed this would lead to more effective and better work. Often in the past but few would be present at the organization of the sections, and men neither fitted nor interested would be chosen to official positions.

A return to the old committee plan has sometimes been advocated. This plan has been followed in the Southern, and the results of the past few years have not been especially encouraging for its adoption in a new association.

The plan of sections above proposed contains the essentials of the committee plan, but it makes it obligatory upon every member to join one of them, and insures an efficient head to organize and lead the work.

5. A more intimate relation with the state societies may be promoted by providing that they become practically branches of the national association, and also by making it the duty of societies sending delegates to make a report of the year's work of the society to the association.

6. Provide for membership of permanent delegate and honorary members as the American Association does now.

7. Choose a president at large, or from the section in which the last annual meeting was held.

Choose one vice-president from each section; such vice-presidents to be of equal rank, and not first, second and third, as is now the case in both associations.

8. To many it seems desirable to change the date of the meeting

to some time in September, so that members would come fresh from their vacations ready for work instead of being tired out at the end of an exhausting year. The change would also avoid the excessive heat of August.

While the College Faculties' Association and the National Board of Dental Examiners have done a great work for the uplifting of the profession, they have thus far worked a direct injury to the interests of the national association.

The Southern has suffered because so many of the members have necessarily neglected its meetings to attend the meetings of the Faculties and Board of Examiners, which have been held at the same time and place as the meetings of the American. The American has suffered severely by the meetings of the Faculties and Board of Examiners overlapping its meetings and absorbing the attention of otherwise active members.

This can be remedied in one of two ways, either by the Faculties and Examiners meeting at another time than that of the national association, or by meeting a week earlier at the same place as the national association. The latter plan is very likely to be tried the present year and its effects can then be properly estimated. It is very reasonable to expect the meeting of the Faculties' Association to be called as early as the Friday before the time of the meeting of the American and the Southern associations at Old Point Comfort.

If the Board of Examiners shall also meet early the work of these bodies will be completed and the members be left free to engage in the work of the national association.

This is certainly one of the most important considerations for the interests of all concerned.

Dr. W. C. Barrett, at the last meeting of the American Association, and Dr. A. H. Thompson, in an article in the late issue of the *Dental Practitioner and Advertiser*, and several other interested members, have expressed the conviction that division associations should be formed to meet annually as parts of the national society. It is undoubtedly a wise and desirable thing to do, and it seems now quite possible to carry out this idea by providing for it somewhat as follows:

1. The members of each division South, East and West may form one or more branches to meet annually except the year the national association meets in the same division.

2. Each branch shall manage its own affairs, subject to the constitution and regulations of the parent society; elect its own officers, and pay its own incidental expenses.

3. Each branch is to receive delegates from societies within its limits, and they shall have the same standing in the national association as those joining direct from local societies.

4. The proceedings of the branches to be sent to the national association for publication in the transactions of the year.

The details of a plan to accomplish this result can be arranged which will not interfere with the customary working of the national association. This plan will prevent the abolition of the present societies, and thus remove the principal objection that has been raised against union. One branch would be practically the Southern Association, and the Eastern would include a large proportion of the American membership.

The West might reasonably form two branches, the Western branch and the Pacific branch. Eventually the best interests of the profession may be served by making four divisions of the country. At present we shall probably succeed better with three.

This article does not presume to be exhaustive but only suggestive.

The discussion of the subject will show us the best way.

The committee has no plan nor desire save to formulate the wishes of the members of the two associations, and invites suggestions as to the points mentioned, or any others which it seems desirable to have considered.

MAKING DIES FOR CROWNS.

By W. B. Fahnestock, D. D. S., Cincinnati, O.

I believe I have hit upon something that may be of value to some young man like myself, who has to find out many things by hard knocks. In making dies for crowns it is often difficult to obtain a die and counter-die of Mellotte's metal, because the surface of the cold die, especially the cusps or any small prominent part of the male die, is very liable to fuse when the melted metal for the female die is poured upon it. This happens even when the male die has been well carbonized and is kept cold by standing upon a piece of ice while the melted metal is being poured, and the latter is made only hot enough to barely flow. Having used the utmost care in doing this I find it impossible to separate the dies when cold without breaking.

To overcome this difficulty completely I burnish a piece of tin-foil over the male die, and leaving this upon same pour the metal for the female die upon it. When cold the two dies will fall apart, and if the foil has been well adapted to the male die the female die will be sharp and as good for all practical purposes as if it had been poured directly upon the male die. The tin-foil prevents the surface of the male die from fusing, providing it be cold before the female die is poured upon it.

My observation may not be new, but I have never heard of it before, and found it out only after much difficulty with other methods in popular use.

REMOVAL OF DEPOSITS UPON TEETH.

By I. A. Freeman, D. D. S., Chicago, Read Before Chicago Dental Society, March 2, 1897.

In bringing this subject before the society it is not the intention to discuss the subject of pyorrhea alveolaris as such, but the removal of deposits which are analogous to it; neither is it intended to treat of the different kinds of calcific concretions, or the causes of these deposits found upon the teeth to a great extent. Deposits are defined as "that which is deposited, thrown, or laid down, especially matter precipitated from a solution in water or any other liquid."

Various authors give the origin of the calcific deposits found upon the teeth as being the saliva and that of the blood serum. Climatic influences govern to some extent the amount and rapidity with which this deposit is made. In a warm climate with dry atmosphere there seems to be far less accumulation than is found upon the teeth of people inhabiting marshy and damp regions and who as a result are troubled with malarial affections. Those persons who are poor eliminators of the waste products of the system are more subject to these concretions than those who are known as good eliminators Age has its influence. For instance, when the osseous formation is completed there seems to be less demand for the lime assimilated from the different foods, and so the secretions become loaded with it. Now with poor elimination the presence of carbonic acid gas as waste in the secretions gives to them the solvent properties, so they are loaded with lime-salts, and as a consequence in different cavities of the body are found these products: stone in the bladder, gall-stones, calcific deposits upon the teeth, etc.

Pathological conditions have a varying influence upon the amount and the rapidity of these accumulations. That which is the more rapidly deposited is, as a rule, soft and of light color; while that which is less rapidly laid down is very hard and dark in color. Where there is a rapid development of calcific concretion the sufferer will usually find it necessary to seek a dentist for relief frequently, thus removing one of the causes of the dark, hard variety, which is said to be the cause of the action of lime, the solidity or hardness and color being the result of long-standing habits, etc., which not being deposited rapidly does not irritate the gums, and so does not drive the patient to the dentist on that account.

Now there are several means suggested for the removal of these deposits. If a solvent could be found that would not be injurious to the tooth substance, and yet be sufficiently powerful to cause the softening of this formation known as salivary calculus, it would indeed be a great boon to the people. It is said that carbonic acid is a good solvent of lime. Possibly carbonized waters, as furnished for soda fountains, might be found beneficial as a wash for the mouth. Perhaps by constant use it would lessen the accumulation, but might not prove to be so helpful as some other kind of acid. Aromatic sulfuric acid is favored by some, both as a stimulant in pyorrhea pockets and also as a solvent of lime which may be left after surgical interference.

Dr. Harlan has suggested trichloracetic acid in dilute form, as being both safe and helpful as a stimulant, and also as a solvent agent, to be used after removal of the deposit by instrumentation.

At a meeting some time since Dr. Younger said he used the commercial strength of lactic acid for the purpose of dissolving the small particles of serumal calcific deposits that may have escaped the instrument. Iodin has been suggested and used as a solvent of these deposits, especially that of green stain found upon the teeth of children. Iodin in other forms has been used with electricity, the theory being that by the decomposition of iodin the electrolytic action was also had upon the lime-salts present in the nodules or scales upon the teeth. I must confess that I have had but a very limited experience with these agents, and I depend mainly upon surgical interference in my practice, using instruments such as are found in our dental depots in great variety. And here I desire to say a word concerning the instruments provided for this purpose, comparing them with those found in the dental depots thirty years ago, for at that time the instruments were crude, heavy and totally unfit for the purpose intended. It is said that Riggs' disease, not yet known as pyorrhea alveolaris, was incurable, and I believe it was rarely ever treated, as with those instruments it was impossible to remove deposits situated below the gums without nearly murdering the patient; while to-day we are provided with beautifully constructed instruments, and it is quite possible to reach and remove the scale or nodule, though it be situated well-nigh at the apical extremity of the tooth. Furthermore, we had not at that time another agent which is so helpful and so full of relief to the patient, cocain. Surely along this line dentistry has made one of its greatest advances. The set of instruments suggested by and known as Dr. Cushing's set of scalers or cleansers, with those forms added by Dr. Harlan, as now manufactured, are the most ideal of any, although there are many forms suggested by others that are very helpful and important adjuncts to those mentioned, and I presume each dentist has some forms of instruments of his own device which he regards as indispensable in his practice and are to him the great desiderata.

We come now to consider briefly some of the preliminary steps in removing deposits upon the teeth. I think it will always be best to first take observations, that we may come to a knowledge of all the conditions—what kind of a deposit we have to deal with; whether it be that which is rapidly desposited, light in color, soft and quite easily removed; or of the dark, hard variety; for if of the former the time necessary for its removal will usually be less than if it be of the latter. Then the form of the teeth should be taken into consideration, whether large, bell-shaped crowns, or short, small and of conical form; whether irregular or well arranged in the dental arch; if in close contact; if the denture be complete; if there be considerable recession of the gum, for the extent of this lesion will have a very considerable influence on the facility with which the operation may be done. These are some of the points we shall do well to observe, for there will be scarcely any limit to the degree of thoroughness demanded in the work to be undertaken.

The operator should always first become acquainted with the case he has in hand and prepare himself for the accomplishment of the work desired. I think it best that the patient be informed with regard to the importance of the operation and the amount of labor necessary for its accomplishment, so that the operator may feel free to make such reservation of time, either for a continuous sitting or for subsequent sittings, as will result in perfect work. I think that the time and physical exertion consumed in properly cleaning a set of teeth which are affected to any considerable extent, or have any amount of deposit upon them, and the subsequent treatment of the gums and teeth, are least appreciated in importance by the dentist himself, and as a consequence by his patient, of any operations that we as dentists are called upon to perform.

I fear that we have not, as a rule, been thorough enough, or have not used anything like the time we should to accomplish the object sought, namely—the cure and eradication of the disease or trouble. Doubtless one reason why some dentists are always busy and have their time fully engaged in advance is because of their exhaustive painstaking in all operations submitted to them. The fact is, we should never be in a hurry about our work. If our patients cannot give the time necessary to complete an operation at one sitting, I believe we should arrange for and do only such a part as can be done perfectly in the time set apart for them. For instance, if you can get your patient to sit for only such time as will be required to clean one tooth in the most thorough manner, why do that and no more; then proceed with the surfaces adjacent or next to the one so completed, but do not leave the first until you have done with it. It may be urged that the hemorrhage from wounded and bleeding tissues will cover up the deposit to be removed, so that the work will be greatly hindered if confined to one locality. In reply to this I would say that the smaller the area so wounded the less will be the hemorrhage and obstruction, and then with proper preparation we can control it to a large extent.

And here we come to consider the preparations for the performance of this work. First, the patient seated in the operating chair should be carefully protected, by placing towels about the neck and lap, from having the clothes soiled. Instruments should be sterilized and so placed that they will be within easy reach, and should be of sufficient variety to reach all surfaces as readily as possible, whether regular or irregular, in close contact or well separated. These instruments should be of metal throughout; wood and ivory handles should be discarded. There should be at hand a large syringe for the purpose of washing away the dislodged particles and care should be taken that all calcific spiculæ be removed, for if left within or in contact with the soft tissues they will become a source of irritation. Rolls and pellets of absorbent cotton and folds of bibulous paper should be ready with which to absorb secretions consequent upon the disturbance of the tissues and excitation of the salivary glands.

A mouth-mirror, which has been warmed by either a bath in warm water or by dry heat, so that condensation of moisture from the breath upon it may be avoided, and two or three silver probes of different forms and sizes should be at hand, to be used as explorers of the surfaces beneath the free margin of the gums, by the delicate manipulation of which one may become an adept in the use of them, so as almost to see by them. Indeed, as in other departments of surgery, they are the eyes of the operator to discover the hidden nodules or scales, roughened surfaces and ragged alveolar borders. Now for this delicacy of touch so necessary for the detection of these minute particles of calcific deposits the fingers must be well cared for; should not be roughened by manual labor, or toughened by the handling of hot metals or the hot end of a cigaret, or otherwise made incapable of that sensitiveness necessary to reveal the most slightly roughened surface upon the teeth or the parts the probe may come in contact with, for if we expect to succeed in our endeavor to cure the case we have in hand we must discover and remove every particle of foreign substance, concretion or deposit.

But there is another instrument needed to be used in treating the parts before we can even approach in many instances the hidden offending nodule, so great is the pain caused by forcing away the gums, swollen and sensitive as we so often find them in pyorrhea cases. These tissues must be anesthetized before operating upon them, and a syringe of delicate construction to carry a mild solution of cocain, preferably 2 to 4 per cent, well down into these pockets should be at hand. Folds of bibulous paper should be placed around the parts so as to take up the excess which may escape from the pocket and thus prevent its absorption by other parts or tissues. With these preparations made we are ready to proceed, having selected the tooth upon which to begin, which will, of course, depend upon what the conditions are and the extent to which the lesion has developed. The instruments which reach the exposed parts most readily will be required first. For instance, if working upon the lower incisors a long curved instrument, used by exerting force towards the gum margin along the lingual side, is the form of instrument usually preferred, the little finger resting upon the cutting edge of tooth, thus guarding against undue injury should the deposit be suddenly dislodged.

The mallet may here be used when the force required to dislodge the scale is so great that it is unsafe to use hand pressure alone, which sometimes happens when the dark, hard variety is to be removed. When the surface has been cleared, other very thin instruments, sharpened to an edge, may be pushed through from the labial aspect, and in this way the lateral sides may be cleaned. To supplement these a broad, thin, hatchet-shaped instrument may be used with good results from the lingual aspect. When the lingual surface needs treatment a straight, thin instrument with force exerted from the cutting edge towards the cervix is best. These instruments will be found sufficient in an uncomplicated case, but should the deposit be beneath the gum upon the labial or lingual surface it will be necessary to have other forms and more delicate instruments. These are found in the set advised by Dr. Cushing.

For the removal of deposits situated beneath the gum margin and extending to the apex, instruments that form a short right angle to the shaft will be found best adapted, and they are to be used by carrying past the nodule, then by pressure towards and upon the root and traction made towards the cutting edge, the right angle end or edge catching up and removing some portion of the deposit with each motion or traction. By repeated and persistent efforts the deposit may be removed and the rough surface smoothed. Of course other instruments will be found helpful; sometimes the scale may be removed entire by the long, thin, curved instrument suggested by Dr. Harlan, the force being exerted toward the apex.

After the various surfaces have been cleared of the large mass of calcific matter, finely pulverized pumice-stone should be applied by means of rubber cup-discs, moose-hide points, wood points, etc. Brushes are helpful and have their place. Along the root beneath the gum a piece of soft pine or white wood will carry the powder, and by rubbing carefully will sufficiently smooth those surfaces. Frequently during and after this procedure the syringe should be used with a mixture of some antiseptic in warm water, preferably Black's 1, 2, 3, ℥i; alcohol, ℥iii; glycerine, ℥ss. Use ʒi in one glass of water and it makes a very pleasant wash for the patient to use. The syringe should be one upon which sufficient force can be applied to wash away the powder, debris, coagulated blood, etc.

This constitutes the typical procedure and will sufficiently indicate the treatment of this lesion, except where a surgical operation is indicated. Of course, there are difficulties attending the treatment of each individual tooth, for which special instruments will be needed to be able to reach all surfaces, and the ingenuity of the operator will be brought into play to overcome them, but he must be patient and persistent, especially with the molars, where each root must be treated as an individual tooth, and where the advantages of everybody's effort to produce an instrument for rendering each difficult operation as simple as possible will be duly appreciated.

Discussion. Dr. F. R. Ross: Only one thing more occurs to me—that we must remember we are working on human tissue and that it is very painful. I can speak from personal experience, for I was in the chair at a clinic once for three hours, and the onlooking dentists pulled and hauled me around as if I were insensible to pain.

Dr. G. V. Black: This is a matter of great importance, the greatest in dentistry. I see more teeth lost from this disease than from caries, and people come continually with the peridental membrane permanently injured by these deposits. The first thing to do is to remove the deposits with the instruments described. Practice handling until you know them and where to place them against the roots of teeth to remove deposits. The importance of skill in this work is not yet appreciated by the dental profession, and the same may be said of the treatment. Cases come with the peridental membrane badly destroyed and yet are dismissed after a little scraping. I have had patients present with half the membrane around the affected teeth gone, and yet they have used the teeth to chew with for ten or fifteen years afterward. The teeth did not grow worse nor did the membrane. Such patients were educated to come for treatment once in from two to six months, and it was a lifelong task, but it was possible to keep up the use of the teeth, so that the food could be masticated with a degree of comfort. Teeth in this condition should be used as vigorously as possible, in order to keep them and preserve their health.

Dr. Garrett Newkirk: I would simply add emphasis to the sterilization of instruments. It is most important here, as a wound with these instruments is very apt to infect the soft tissues. Scalers with hooks are difficult to keep clean, but there is no means so certain for sterilization as boiling after use and leaving with some preparation, such as oil of cassia, on them.

One case occurs to me, where the lower incisors were badly loosened by pyorrhea and crowded, and one was in a hopeless condition. The worst one was removed and the others were cleaned and then drawn together by ligatures, apparently curing the case. Where the teeth were so crowded that one could be spared, and a condition of drainage established, cases have repeatedly been cured by removal of the worst one.

Dr. E. R. Carpenter: There is one point—the necessity of working on but one tooth at a time. In removing these deposits take a single tooth, select the necessary instruments, then diagnose carefully, so that you may know how to proceed after you begin the work. I cocainize the gum with a 10 per cent solution, covering the surrounding gum with cotton, and never leave a tooth until I think it is perfectly clean.

Dr. E. Mawhinney: I have not been able to use cocain enough at one sitting to do much good, so for two years I have used a 2 per cent solution of trichloracetic acid before removing these deposits. Dry the gum, wrap cotton around a thin scaler and dip in solution, then carry cotton all around deposit and leave it there for a moment. The astringent action prevents hemorrhage, and the acid has all the deadening effect of cocain.

Dr. C. P. Pruyn: It is impossible to do much without thorough education of the patients. Where the deposit has not progressed to annoyance, unless the gravity of the situation is impressed upon them, they think you are too cautious, or are trying to make work. When patients are given to understand what the results will be if the deposits are not removed, some success may be attained. I think the essayist's solution of cocain is not strong enough. When used locally a 10 to 20 per cent solution is not dangerous and gives better results.

Dr. Don M. Gallie: In mouths where the teeth are surrounded by calcareous deposits, we more frequently find the inferior incisors injured by the deposits than any other teeth in the mouth. I recall a case that came under my care over five years ago, where the lower incisors were so loose from deposits that there was danger of removing the teeth by using the ordinary methods of scaling. To guard against this I took a strip of modeling composition and took a shallow impression of the anterior teeth, allowed it to harden in ice-water, then trimmed the strip labio-lingually until it was about one-quarter of an inch thick, and placed it back upon the cutting edges of the teeth, thus holding them all firmly in place. It was then an easy matter to remove the immense deposits that were present, and after scaling as thoroughly as possible I ligated the teeth together, allowing the strip to remain until they were all firmly ligated. I used the strip at each subsequent sitting. About three weeks ago I saw the patient for the first time since the operation was completed and was pleased to see the teeth firmly attached and the gum considerably restored, owing mainly, in my opinion, to the method employed.

Dr. C. F. Hartt: One theory advanced to account for the formation of calcareous deposits is, that the lime-salts in the saliva are precipitated by the carbonic acid in the breath, and so form on the teeth. It would therefore seem inadvisable to prescribe carbonized waters, as the essayist has suggested.

SWALLOWED HIS FALSE TEETH.—The Ottumwa, Iowa, paper reports that the Rev. Thomas W. Russell, a prominent divine of that city, died suddenly from cerebral apoplexy, which was induced by the presence in his stomach of a plate of false teeth. A physician was called, but could give no assistance, and the unfortunate man died in thirty minutes after swallowing the plate.

FOREIGN BODIES IN THE TONGUE.—Dr. Anderson, of Melbourne, after removing a piece of an amber mouth-piece, one inch in length and half an inch in width and thickness, from the tongue, says: "Instances of the long retention of foreign bodies in the tongue are not so uncommon as might be supposed. In the *Lancet* of 1846, mention is made of the case of a German soldier who received a bullet wound, passing through the cheek, jaw, tongue and out of the mouth on the opposite side. The wounds healed in a few weeks, but repeated suppuration occurred in the tongue, and thirty-two years after the original injury there was extracted from the substance of the tongue a molar tooth."—*Brit. Jour. Dent. Sc.*

Digests.

METHOD OF TREATING PULPLESS TEETH. By Dr. H. C. Gilchrist, Nyack, N. Y. Read at 2nd District Society, October, 1896. My method of treating dead teeth has been very successful during fifteen years of practice. Where there is a great amount of inflammation and swelling, the suppurative stage approaching, I first open the pulp-chamber to release the confined gases. I then cut a small disk from blotting paper, about three-eighths of an inch in diameter, which I saturate with chloroform and apply directly over the root of the diseased tooth, covering the same with a little larger disk of rubber-dam to protect the lips or cheek from being blistered. Two or three of these applications will in a few moments produce a small blister and soften the gum tissue. I then paint the parts thoroughly with iodin and aconite, equal parts, and, giving some capsicum plasters to use over the affected part, I dismiss my patient until the following day. In the majority of cases when the patient returns I find that the abscess is discharging through the gum where I produced my blister with the chloroform disk, and that the inflammation has somewhat subsided. If not discharging, it is ready to be lanced. I then cleanse the canals with Donaldson broaches, wash out thoroughly with water, as hot as the patient can bear, following with bichlorid of mercury (1-10,000). Then, making a piston of a broach wrapped with cotton, I carefully force beechwood creosote through the canal until it appears upon the gum. In very obstinate cases I use chlorid of zinc, ten grains to the ounce. I then place in the canals a dressing of cotton saturated with the following preparation: One-half ounce iodoform; creosote of sufficient quantity to make a thin paste, to which add half dram of oil of cinnamon, which, while acting as a germicide, also disguises the odor of the iodoform. This combination has given me more satisfaction than any that I have ever used. It is very rare that it is necessary to make more than the second application to effect a cure.

If the tooth is in a quiescent state when I begin I open the pulp-chamber and, after thoroughly cleaning out the canals, wash with hot water and bichlorid of mercury, then pack the canals with cotton saturated with spirits of camphor, leaving it in for twenty-four hours. When the patient returns I pursue the same treatment with my iodoform preparation as before mentioned.

When the tooth is ready for filling I adjust the rubber-dam, wash out the canals with alcohol and follow with chloroform, which I evaporate with hot air. If I have found it necessary to drill through the foramen I fill the canals with gutta-percha point dipped in chloro-percha, which I force in with a warm instrument; otherwise I use my preparation of iodoform, mixed in a thin paste of phosphate of zinc, to which I add a few shreds of cotton, which can be readily forced up to the end of the root.

Once in a while I meet an obstinate case where some constitutional disturbance causes a great deal of trouble, but with perseverance it can usually be conquered. Recently, when there has been a great deal of pain, I have prescribed ammonol in ten grain doses, with satisfactory results. But I must confess that I have met a few cases where all the prescribed methods have failed In these I extract the tooth, excise the end of the root, wash out the socket with bichlorid of mercury, and after filling the canal with gutta-percha, return the tooth to its former position, tying it fast to the adjoining teeth. The first tooth that I treated in this way was a superior central incisor. That was fifteen years ago and it is still in the mouth, doing good service. Since then I have treated a number in the same way with good success, they being limited to incisors, canines and bicuspids.—*Items of Interest, January, 1897.*

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COMBINATION PLATE AND BRIDGE WORK. By Dr. A. S. Condit, Findlay, O. Read before Pennsylvania State Dental Society, 1896. After a careful examination we should be able to decide upon the applicability of the different systems of work in respect to usefulness, appearance, durability and comfort. This necessarily requires a familiarity with all classes of work. If this thorough knowledge were possessed, we would never use a fixed bridge whose abutments would not be sufficiently strong to offer the needed resistance, either because of a lack of firmness or too long a span. Neither would we use a plate attached by a clasp to the natural teeth when the friction caused by the lateral motion in mastication would tend to loosen the teeth clasped, so that in time they would give away.

Admitting that the teeth used for the supports of a fixed bridge will give way if overworked, and the well-known evils resulting from the use of a plate, especially if retained by a clasp, is it not reasonable to suppose that if the teeth adjacent to the space to be filled with the artificial denture were first crowned or banded to prevent wear or decay, and attachments were placed thereon and a plate made to rest both upon the teeth and gums, receiving an equal support from both, that we would read nature's demands in a better manner than in any other way? If a workman attempts to make any one method meet all cases, is not failure the inevitable result? Fixed bridge-work, the ordinary plate, the portable bridge, all have their place in dentistry. We must discriminate between them, and use the right one in the right place, making our work an individual operation adapted to each case, which will insure higher results and the greater good to patients.

All workmen will not take this unprejudiced view of work. One capable workman says, I have inserted two full upper portable bridges that are giving perfect satisfaction, in one of the cases the third molars being the only support. Another says that if all removable bridges are not failures it is not the fault of the construction, but due to the favoring of the appliance on the part of the person wearing the denture or to the absence of occluding teeth.

A few weeks ago it was my privilege to examine a full upper denture without any plate covering the palate and with but one support. It had been worn for four years, and, as far as I could see, was perfectly satisfactory. The same person was wearing a full lower denture with two supports, and it was as firm as fixed bridge-work. I could mention many similar cases.

It is generally agreed that the two most commendable features of fixed bridge-work are firmness and the retention of their supports in their proper relative positions; but firmness is obtained at the expense of the elasticity which is characteristic of the natural organs, and especially the teeth. This is not so in removable work, as there is a yielding of the denture proportionate to the texture of the subjacent tissue.

In combining the plate and bridge we get most of the good qualities of each class of work without the strong objections that each possesses when used alone. The pressure is divided and distributed between the attachment teeth and the subjacent tissue.

The work is held firmly, and the attachment teeth are held in their normal positions. The space which in bridge-work is left for cleansing is filled up. The work can be removed and replaced at the pleasure of the wearer, and when the denture is removed both the work and the mouth can be thoroughly cleansed. One notable advantage of this class of work for the upper jaw is that the surface of the plate which rests upon the gums need be only wide enough to cover the ridge, and thus avoid the common interference of artificial dentures with taste and speech.

For holding the combination plate and bridge-work in place I have devised an attachment. It consists of an open gold clasp tube, 26 gauge, which is soldered to the crown; also another telescoping tube which is called the shield, closed at one end, with a round, tapering pin in the center, a trifle larger than the tube; and a V-shaped metal strip on the side of the telescoping tube, which I have named the ear.

A correct understanding of the construction of the attachment and the principle of its workings is quite important. As the pin passes into the tube, which is a trifle smaller, it embraces the pin with a tension proportionate to the spring. The outside telescoping tube fitting closely on both sides of the inner tube prevents any rotation, while also shielding the pin. The ear is for the purpose of giving a firmer hold into the plate, but it is not used for metal or continuous-gum work.

The attachments are uniform in size and interchangeable. They are sufficiently long for any case, but in close bites it will be necessary to shorten the attachment to correspond with the articulation. If there should be unequal absorption of the ridge, which might occur in a one-attachment case, the tube may be shortened and the work brought as close to the ridge as desired.

I have also devised an implement called the guide, which is used in setting the tubes in a two-attachment case, vertical and parallel with each other. Any dentist who can make a crown will experience no difficulty in making the work. In places where but one attachment is used, as in substituting the lower molars, much will depend upon the shape and texture of the ridge; for if the ridge were flat and the gums soft and spongy, the liability to induce strain upon the attachment tooth would be increased; but if the ridge is high and the gums hard, but little, if any, strain will be brought to bear upon the attachment tooth. I have several practical cases now in use that seem to be as serviceable as a fixed bridge with second bicuspids and molars, with a single attachment to the lower first bicuspid.

The success of such cases depends largely upon the support given by the alveolar ridge. As the contact of the work with the ridge is controlled by the attachment, which can be adjusted to suit the case, there is not that undue absorption of the gums that occurs when the work is held in place by a clasp.

I consider this method especially adapted in substituting the lower incisors. The principal advantages arising from using this method in this case are that the cuspids are held firmly in place, no undue strain is placed upon the gums, and the work can be removed and thoroughly cleansed. If fixed bridge-work were used it would be difficult to adjust, on account of the leaning conditions of the cuspids.

Every workman knows how unsatisfactory a plate is in the work of mastication where none but the six anterior teeth remain, especially if there is but little ridge. My plan of constructing such a case is to band or crown the cuspids and couple them together back of the front teeth with a heavy iridio-platinum bar, the same as in making an ordinary plate. I have found this method of attachment fully as useful for many places in the upper jaw as in the lower, especially if the teeth are all gone on one side and not on the other. —*Dental Cosmos*, *January*, *1897*.

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INFANTILE SCORBUTUS. By Joseph Boylston, D.D.S., Portsmouth, N. H. Knowing that infantile scorbutus is a disease which has been but little discussed among dentists, it is my desire to report a case which, being my own child, I have studied more or less carefully. I will give a history of the child's life and condition up to the time when the disease first showed itself. She was, like many babies, subject to severe colic during the first few weeks of her life, and fresh cow's milk prepared with peptogenic milk powder seemed to be the only thing which she could take with no evil results. I would say, for the benefit of those who have had no experience with this preparation, that it is a powder composed of sugar of milk, extract of pancreas, and bicarbonate of soda. The fresh milk was brought to us in sealed jars, sometimes reaching us while still warm from the cow, and was immediately prepared in the following manner, as directed on the bottle of the powder: To half-pint measure of milk was added one-quarter pint of barley water, four tablespoonfuls of cream, and one measure of the powder. The whole was then stirred, put into a tightly stoppered sterilized bottle and placed in a kettle of water at 115 degrees and bathed for twenty minutes. It was then poured into a sterilized graniteware dish and quickly brought to just the point of boiling, then taken off and poured into smaller bottles, each containing enough for one feeding, and stopped with a plug of absorbent cotton.

The child thrived on this until she was eight and one-half months old, when she began to weaken and grow peevish. A slight purplish swelling appeared in the gums around one of the five teeth then erupted. The swelling rapidly spread to the gums around the other teeth, and her mother insisted that the child had bruised its own gums by some fall or by biting. At about this time we noticed dark spots giving a sort of mottled appearance to the flesh over the shoulder joints, followed very soon by the same appearance about the thighs and legs. By this time the baby refused to stand or put her feet in any position which would bring the slightest pressure on her hips; she objected to being handled, or even moved or bathed, and her cries of a few days previous had become an almost constant moan. The knees were drawn up to her body, and any attempt to straighten her legs caused her to scream with pain. I consulted a number of physicians, none of whom knew what was the trouble or could suggest a remedy.

I remembered seeing the report of a discussion started by Dr. Rhein in which a condition was described which closely resembled the case in hand. I re-read the discussion and also the paper by Dr. Kirk referred to in it, and went to work on the line of treatment advised by the speakers. In order to make assurance doubly sure I again called in a physician, gave him the articles to read, and he agreed with me in the diagnosis.

The child was given fresh milk without the powder, the juice of an orange each day, and juice of beef obtained by slight broiling and expressed with an ordinary lemon-squeezer. The beef was alternated with a soft-boiled egg. In two days a decided improvement was noticeable and in three weeks she had apparently entirely recovered.

I would say that during the continuance of the disease all development of the teeth seemed to stop; but there was no breaking down of the enamel nor loosening of the teeth, and just as soon as she recovered the development was resumed and four teeth were simultaneously erupted with almost no irritation. There seemed to be no derangement of the bowels except perhaps a very slight tendency to constipation.—*Items of Interest, January, 1897.*

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CALENDULA IN DENTISTRY. By Dr. W. I. Wallace, Montgomery, N. Y. Read at 2nd District Society, October, 1896. Calendula officinalis is the scientific name for the English marigold, whose blossoms much resemble those of the arnica plant, with which I presume every one is familiar. The tincture is prepared from these blossoms in the same manner as arnica, by covering the flowers in a jar with alcohol and allowing them to stand several days. The flower or tincture can be purchased from any homeopathic pharmacy. The provings of this drug show it to have a powerful action in suppurative conditions.

Upon taking up dentistry I saw in calendula a remedy valuable in all such conditions. In the presence of putrescent pulps, after washing out the canal with warm water, or one-half per cent solution of ammonia, to remove the decomposed matter, pump in calendula with a broach wound with cotton, and then pack the canal with cotton saturated with calendula. If an old case, with an abscess at the apex of the root, with or without fistula, two or three treatments twenty-four hours apart will be necessary. If an acute abscess, it must be evacuated first.

Destruction and absorption of the pyogenic membrane or pus sac are rapidly caused by this medicine. In acute abscess, located in the alveolar process, after lancing gradually inject an ordinary hypodermic syringeful of the tincture, pressing around it frequently to force into all parts and to rinse out the sac, but leaving a small quantity in when through. This will generally be all the treatment required, though a second injection is sometimes necessary.

Another use is in pyorrhea, where this remedy is certainly indicated and has proved very satisfactory in my hands. Inject a few drops with hypodermic syringe, passing the needle close to the root, to the bottom of the sac. If daily treatments can be given a speedy cure should follow. The internal administration of twenty drops in half a glass of water, a teaspoonful every three hours until all is taken, will assist in the cure.

A pledget of cotton saturated with the tincture and placed in the alveolus after extraction will aid in the rapid healing and filling up of the socket, as this remedy applied to a wound will cause it to heal without suppuration, leaving almost no scar.

Calendula stimulates proliferation of white blood corpuscles; increases quantity of fibrin and aids its transformation into connective tissue; induces healing by first intention; promotes granulation and prevents disfiguring scars; promotes favorable cicatrization with least amount of suppuration; prevents or arrests gangrene, and aids in healing or reproducing bone.—*Items of Interest, January, 1897.*

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THE PHYSICAL PROPERTIES OF THE SILVER-TIN AMALGAMS. By G. V. Black, M.D., D.D.S. The article in the *Cosmos* for July, 1895, devoted to the study of the *flow* of amalgams, might be regarded as conclusive and final but for later discoveries modifying the degree in which this property is influenced by what is known as aging, and the differences due to formula. The instrumental facts given in the study of expansion and shrinkage of the silver-tin amalgams in issue of August, 1895, have been confirmed at every turn in the progress of the work. The article in the issue of January, 1896, announced the discovery of the effects on shrinkage and expansion accompanying the change produced by the lapse of time after alloys are cut—known as *aging*. Enough results produced by artificial aging for a number of formulæ were given to show that the effect is universal, but differing in degree with different formulæ. It seemed to be demonstrated that what had been known as aging was a slight oxidation of the cut alloy by which its chemical relations to mercury were profoundly changed. The change is such that when an alloy is made into an amalgam immediately after being cut, and is found not to shrink, or may expand, it will be found to shrink after the aging has occurred. This has been abundantly confirmed by further studies so far as the production of shrinkage is concerned. The instrumental facts were right but my deductions were wrong.

Under the supposition that the change was brought about by oxidation, alloys were put up in corked bottles, in long tubes partly filled, corked with cotton and inverted, so that with every change of temperature the air would be drawn in and forced out through the cut alloy. Alloys were put up in glass tubes, packed full and hermetically sealed; some of these were wrapped in tin-foil, others exposed freely to the light, some kept in an ordinary drawer without especial precautions. Some were hermetically sealed in large tubes that were damp and but partly filled with alloy, to be constantly in contact with moisture. The formula for this work was—silver 65, tin 35. Others were used for comparison. The unit of measurement is one-ten-thousandth of an inch, indicated by the word *point*. The alloys were put up at intervals between October, 1895, and January, 1896. Examinations began about the middle of March. Those put up in hermetically sealed tubes in October gave a shrinkage of five points, in January two points. Those put up damp gave the same results as those put up dry; those exposed to the light the same as those excluded from the light. Those in corked bottles give the same results as those in hermetically sealed tubes. Those subjected to frequent changes of air showed no difference from those in corked bottles or hermetically sealed tubes. Those put up in October gave five points shrinkage; those in January two points. Tubes put up in November and December gave intermediate results. Five points was the general result for the older alloys, two points for those put up the shorter time. Practically the results were uniform. Alloys laid away in the ingot seem to suffer no change.

Circumstances led to putting a part of the alloys put up in January into a case in an adjoining room. In testing these I was surprised by a shrinkage of eight to nine points, instead of two, as had occurred with those kept in the drawer of my desk. The difference in the two rooms was one of temperature. During an absence from January 8 to March 10 the room in which my desk stood was abandoned to the cold. The case in which the tubes were placed stood near the heater in the other room, often becoming very warm. To probe the theory of oxidation more thoroughly air was thoroughly excluded from alloy in tubes by the introduction of gases and the tubes hermetically sealed. Part were laid away for aging by time and part artificially aged. The result from the agings was substantially nine points in each case—the hydrogen, nitrogen and oxygen tubes giving like results. Another experiment in handling the alloys without any exposure to the air gave substantially a shrinkage of nine points.

It is therefore shown that the change in the alloy is not dependent on the presence or absence of oxygen. Oxidation has nothing to do with it. *It is not a chemical agent acting upon the alloy from without.*

All of the evidence now seemed to point to temperature as the one factor producing these changes in cut alloys. All formulæ tried had been affected in a similar manner but in varying degrees. The change occurs in the metal itself, and seems to occur more rapidly in high than in low temperatures.

In the study of thermal influences on cut alloys I obtained the use of a section of a vat in an ice-plant, containing the cold brine in which ice is made. Tubes of alloy were hermetically sealed and sunk in this cold brine, and controls of the same cutting were deposited in my drawer for comparison. An ice-tank was arranged for keeping cut alloys at the temperature of melting ice, and cut alloys, both in sealed tubes and corked bottles, were placed in it for future tests. Sealed tubes of alloy were hung in my south window between the glass and a heavy paper curtain where they would receive the full light and heat of the sun. Some of these were protected from the light by wrapping in tin-foil. My incubating ovens for the culture of microorganisms were brought into use for evenly maintaining temperatures between room temperature and that of boiling water. These proved most valuable, maintaining any desired temperature for any length of time without variation. As I was ignorant of what to expect from the lower temperatures, frequent examinations had to be made to note the progress of the effects of different temperatures.

On the alloys hung in the window the first effect was a marked change in the working property. The harshness and quickness of setting of a fresh cut alloy containing as much as 65 per cent of silver was notably modified in two days, so that the alloy could be worked with more ease and leisure. Within a week, however, the fillings came to shrink and the margins to show shrinkage gaps on microscopic examination. In three weeks they came to shrink seven to eight points. The tubes wrapped in tin-foil were placed side by side with those fully exposed to the light. The result was the same in both sets of tubes. The highest temperature noted on these tubes was 105 degrees F.; it rarely exceeded 95 degrees. At 140 degrees in the ovens cut alloys came to shrink very quickly, the full limit of shrinkage occurring in from six to twelve hours. At 130 degrees the effect was slower, but the shrinkage of the formula silver 65, tin 35, was greater than any other—ten points instead of nine, in one case eleven. With 120 degrees the effect was still slower, the shrinkage seemed to stop at about nine points. The full effect seemed to be produced in three days and a half. 110 degrees were also found to affect the alloys promptly. In all of these experiments in aging in the incubating ovens (low temperature aging) the most salutary effect in the working property of the alloys was noticeably the lowest temperatures producing the best results.

The alloys placed in cold brine showed no perceptible change at the end of six weeks. The alloys placed on ice showed a marked change at the end of fifteen days, working much softer and not setting so quickly. At the end of three months the test fillings did not stand up so sharply as at first; at the end of five months there was a shrinkage of two points. A severe test of aging by shaking apart from thermal influences resulted in no change. In this way I have tried one thing after another, until I have excluded everything that has been suggested to my mind as possibly affecting the physical characters of cut alloys, and gradually it has been narrowed down to the one factor, thermal influences. With the alloy, silver 65, tin 35, the shrinkage produced by subjecting it to the temperature of boiling water has been nine points quite uniformly. That shrinkage was exceeded only by subjecting the alloy to 130 degrees continuously for a number of days, and after that degree of shrinkage was produced a longer continuance of that temperature seemed to produce no further effect. Substantially the same effect has been produced with each alloy that has been subjected to trial, only that there has been a difference in the amount of shrinkage produced. In other words, each alloy is found to have a fairly definite *shrinkage expansion range*. In some this range is all shrinkage, in others it is all expansion, and in still others it is both. Unmodified silver-tin alloys (those that contain no other metal) having 75 per cent of silver, or more, expand only. They cannot be made to shrink by aging, though their expansion can be greatly modified. The unmodified alloys containing as much as 65 per cent of silver and less than 75 per cent expand when fresh cut, and shrink when fully aged. Those alloys containing as much as 50 per cent of silver and up to

61 or 62 per cent shrink only, but shrink much more when aged than when used fresh cut. Those that contain less than 50 per cent of silver first shrink and then expand. When used fresh cut the expansion is the greater; when aged the shrinkage is the greater. Alloys containing from 65 to 75 per cent are hard and make hard, quick-setting amalgams; they make also the strongest amalgams that can be made of silver and tin. Alloys containing less than 60 per cent of silver are soft, and make soft, slow-setting amalgams. These grade into the group above somewhat gradually. Alloys containing more than 75 per cent of silver are soft, and make frail, slow-setting amalgams. The slow-setting occurs somewhat suddenly, after passing 75 per cent. These subdivisions of the silver-tin alloys are sufficiently distinct to be of much value in studying the possibilities of the silver-tin amalgams. The group between 65 and 75 per cent of silver must be our dependence in the consideration of the unmodified alloys for filling teeth. All of them are readily brought to the point of neither shrinkage nor expansion by what I shall call fractional aging, or fractional annealing or tempering. Hereafter I shall use the term annealing when artificial aging is meant. For instance, the alloy silver 70, tin 30, expands fourteen points when fresh-cut, and shrinks seven points when fully annealed. It requires only a few experiments with annealing this alloy in the incubating ovens to be able to stop off the annealing when the zero line is reached, and this is true of any alloy of this group. The next question is, will it remain at this point? Experiment has shown that this formula will not; it will come to shrink more by *time* at common temperatures. Will any alloy do so? The suggested explanation is this: In the cutting of an alloy the violence used hardens it, producing an allotropic condition of the metal, in which its chemical relations to mercury are profoundly changed. High temperatures, or even ordinary temperatures acting for a considerable time, have the effect of annealing the cut alloy and restoring its normal condition. If this explanation holds good, an alloy that has been fully aged or annealed—that is, brought to its normal condition—should remain in that condition indefinitely, at normal temperature. The first experiment on this theory, in April last, was to harden a portion of an ingot as much as possible by hammering and compare cuttings from this with cuttings from the contiguous portion of the ingot not hammered. It could not be ham-

mered very much because of its brittleness, but it was in some degree flattened and drawn. The tests showed an increase in expansion of four points. The next thing to do was to find an alloy that would neither shrink nor expand when fully annealed, also to learn what constitutes full annealing, and then to test these annealed specimens by time; indeed, to test the theory in all its bearings. To this end I had a number of formulæ cast and began annealing them to the zero line, trying at first the boiling water method and then abandoning it in favor of the ovens. The result showed that the range of formulæ of the unmodified silver-tin alloys would have to be limited to that lying between 70 of silver to 30 of tin, and 75 of silver to 25 of tin. The former annealed to zero would come to shrink more in summer temperature. The latter could not be held down to the zero line. When the alloy silver 75, tin 25, is used fresh-cut it gives about sixty points expansion; varying considerably in different fillings, as is always the case with great movements, whether up or down. In the upward movement the filling rises squarely up above the margins of the cavity without spheroiding, if the cavity-walls are parallel and very smooth. If the cavity-walls are rough or uneven it will spheroid (round up in the center) or take various shapes as it is held down more or less by various portions of the cavity-walls, and the measurements will vary accordingly. When the condition of the alloy is such that the movement is very slight, the results are very constant. Ten minutes annealing of this alloy (silver 75, tin 25) in boiling water was insufficient; fifteen minutes reduced the expansion to six points; thirty minutes, then one hour, produced no change. Annealing in glycerol at 300 degrees F. for half an hour reduced the expansion to one and a half points. The alloy thus annealed was distributed in different positions to test its staying qualities. In corked bottles some was placed in my drawer and some in the south window in the sun. In a month all expanded five and six points. This seemed to demonstrate that an alloy could be overannealed, so that in normal temperatures it would gravitate back to a condition of expansion. Here a danger was pointed out to be avoided in the annealing and tempering of alloys.

The plan developed for this annealing is what I call the fractional plan or fractional annealing. The alloy was tested as to its full annealing point by fifteen minutes in boiling water. If it came to or slightly below the zero line, not more than three points below, I tried the fractional annealing. The alloy was placed in the oven at 120 degrees F. and allowed to remain six hours. Now the whole of the alloy was removed to room temperature and a test filling made and the result determined, which usually requires twenty-four hours. The alloy is found to expand six points (I am reciting actual experiment). It is now returned to the oven for another six hours, for it has been learned that the last part of the reduction is much slower than the first. Then the whole of the alloy is again removed to room temperature and another test made. In this test it is still found to expand two points. It is again returned to the oven for three hours and a third test is made. Two fillings measured with great care give respectively one-half point and one point expansion; and it is decided to distribute the alloy for a test of its staying qualities.

Latterly, after the primary examination by boiling fifteen minutes to find the point at which it will anneal, a sample of the alloy sufficient for three or four test fillings is put into the oven and tested in six, nine, twelve and perhaps fifteen or eighteen hours, depending on the progress shown by the first test. From these tests the time for annealing is determined and it is put into the oven for that time. If the alloy has come down to three points by the boiling-water test, it will require less time in the oven than when this test has reduced it one point only. Preparations from five ingots of alloy representing five different melts, annealed to zero in the ways mentioned, or within one point of zero, have passed through the heated term of this summer without material change. The oldest one was prepared and distributed April 27. One sample was placed in my drawer, one was put in a cool place at first, later on ice, and a third was hung in my south window between the glass and a heavy paper curtain, where it was exposed to the full rays of the sun; and it stayed there until the last test filling was made on the 5th of October. In this way I tried to imitate the utmost heat of summer and the winter's cold. The greatest variation from this alloy has been two points. Six fillings made within a few days after the tempering gave expansion 1—, ½, 0, 1, 0, 0, respectively. I regard these variations as being within the limits of error. Of the test fillings made at intervals during the summer, one from the bottle in my drawer gave two points expansion, and one from the bottle in the window, the last one, gave zero. The alloy kept on ice was removed to room temperature September 5, and a filling made from it October 21 gave zero. All the rest of the fillings gave either one expansion or a fraction that failed to reach either one above or one below that figure.

The other successful temperings were put up May 5, May 21, June 5 and June 15, so that all were in time for the heated term of July and August, which is the severest test of the seasons. Of these none has varied so much as two points, and they have therefore been closer than the first. They were all kept in the drawer. These successful temperings seem to me to establish a very important principle and demonstrate that we can have alloys that will retain their physical characters for a sufficient time, if not permanently. The time, only a little over five months, may not be sufficient for a full test; years will be required, but the time being that of the severest test possible—the hottest months of the year—adds greatly to its value.

The great shrinkage we get with the formulæ containing from 50 to 60 per cent of silver can be much modified by the proportion of mercury in the mix, and the time at which the mass is packed in relation to the time of mixing. These shrinkages occur quickly, often one-half occurring within the first two hours after the filling is made. If the packing of the mass is delayed as much as possible and the filling made *dead hard* the shrinkage will be less. If so little mercury is mixed with the mass that it will only make a dark powder that can be made to cohere by strong pressure, the shrinkage will not be so great If so much mercury is mixed with the alloy as to make a very sloppy mass, and this is put in without removing any of it, the shrink will be considerably reduced. None of these prevent shrinkage, they only modify the amount. The two latter methods make very frail amalgams and none of them is suitable for filling teeth. With an alloy in condition to neither shrink nor expand, these influences seem to be inoperative in all of them. If the alloy is in condition to form a compound that neither shrinks nor expands in setting, no manipulation to which I subjected it will cause it to vary from it. I am therefore able to make filling after filling that will measure alike (or within what I regard as the range of error in measurement, about one point) and show no break of the margins on microscopic examination. The flow and crushing stress may be greatly modified by changes in the amount of mercury and the mode of manipulation.

There is one thing that troubles me and leads me to suspect that there is some influence not yet discovered acting to modify the shrinkage and expansion of alloys. Among the cut alloys that have come to me there are several samples that give a shrinkage of from twenty to twenty-four points. This also appeared in the fillings made at the Illinois State Dental Society last May, as well as I could make out by microscopic reading. The greatest shrinkage I have been able to obtain from alloys cut by myself has been eighteen points.

Alloys containing from 50 to 60 per cent of silver, when used fresh cut, do not shrink much, and when used in this condition make fair fillings. When I say *fresh cut I mean that the alloy is used within one hour after cutting.*

When we pass on to 65 parts of silver we begin to have expansion of the fresh cut alloy, and at the same time pass into the group of hard alloys. From this on to the proportion of 75 parts of silver the increase in expansion is very rapid and the alloys are correspondingly sensitive to slight changes in the exact formula. By the steps of 5 and 2½ per cent we get one point expansion at 65 per cent of silver, and, successively, fourteen at 70, forty-two at 72½ and sixty points at 75 per cent of silver. The shrinkage when annealed is reduced less rapidly, and, therefore, the expansion shrinkage range is continually increased. Beginning with the annealed alloy with 65 parts of silver we have, according to the new tubes, ten points shrinkage, and successively seven with 75 per cent, three with 72½, and then pass to six points expansion in the annealed alloy with 75 per cent of silver. As the formulæ for ingots for the production of tempered alloys by the process of fractional annealing must give a shrinkage of not more than three points, and possibly only two should be admitted, and must not expand when fully annealed, the reader may realize how close is the margin, and how accurate the work must be if their manufacture is really successful. We may have other alloys, but the exactness required will be none the less.

I will now consider the *flow* and the *strength* of amalgams under stress. With silver 40, tin 60 parts the flow is 40 per cent for the fresh cut, and nearly 45 per cent for annealed alloy. Taking the individual blocks, the variations were from 33 per cent to 54. It will be noted the flow of the annealed alloy is the greater. The annealed alloy makes the softer and tougher amalgam. This is the general rule, though the difference fades almost entirely away with the larger proportions of silver. Inversions of this rule frequently occur in experimental work in which the blocks from the annealed alloy give the lesser flow. As the resistance to flow is sharply influenced by the proportion of mercury, either too much or too little weakening it, also by the degree of perfection of the manipulation, this could hardly be otherwise. An amalgam that will give 40 per cent flow in one hour under a stress of sixty pounds is not suitable for filling teeth in any position in which the stress of mastication comes upon it. No matter how well it may be seated in the cavity, and even if it did not shrink or expand, it could be only a question of time, and not a long time either, when it would be moved by the stress of mastication and begin to leak; unless indeed the power of mastication is much below par. In resistance to crushing this alloy is also the weakest of the series. It will be noted that the resistance to flow increases with the increase of silver, and there is a notable increase in this resistance at 65 per cent, or when we enter the group of hard alloys. Through this group there is not much variation until 75 per cent of silver is reached, when the resistance to both flow and crushing begins to decline, and, I may say, continues slowly to pure silver.

Alloys to which other metals have been added with the idea of modifying their chemical or physical properties I shall call *modified* silver-tin alloys. For some years it has been the habit of many manufacturers of alloys to add other metals with the idea, I think, of improvement in the chemical qualities of the amalgam, though some seem to have had in view the improvement of the physical qualities as well. The study I now give is to be regarded as primary, the question being, what modifications are produced by moderate additions of other metals? and is intended to serve as a basis for finding formulæ for modified alloys of suitable physical qualities for filling teeth, not for pointing out the specific compounds. To this end I have selected the formula silver 65, tin 35, as a basis upon which a temporary trial of the metals usually used for the modifications should be made. To this formula I have added gold, platinum, copper, zinc, bismuth, cadmium, lead, and aluminum, separately in the proportion of 5 per cent in each instance.

Gold.—The addition of gold in the proportion of 5 per cent seems to give a little softer working property and slows the setting of the mass. The mass has something more of the pasty character, and the fillings made of the annealed alloy are apt to finish very soft, the surface being so springy that it is difficult to make a good finish. It takes less mercury than the unmodified alloy, and the flow is a little more. The amalgam is very tough and bears a heavy stress before crushing. The shrinkage expansion range is reduced three points.

Platinum.—The appearance of the mass made from this alloy is very remarkable. That from the fresh cut alloy is fairly white, but that from the annealed alloy is very dark and, in kneading, blackens the hand to an extraordinary degree with a grayish-blue black that is rather difficult to remove. The mass looks dirty and the finished filling is dark. The mass has a peculiar softness to the feel under the instrument. The setting is slowed considerably. It flows badly. The shrinkage expansion range is increased and lies a little higher in the scale.

Copper.—This alloy, fresh cut, sets very quickly. The mass makes up soft but becomes hard almost immediately it is left to itself. I had some difficulty in getting good fillings of the fresh cut alloy on account of this extreme quickness of setting. The annealed alloy makes a very soft, pleasant-looking mass, and the setting is as slow as in the unmodified alloy. Expansion and the expansion shrinkage range is markedly increased, the flow is diminished, and the crushing stress is the greatest of the series.

Zinc.—This alloy is very remarkable for the amount and *slowness* of its expansion. It expansion was so slow that I evidently overlooked the fact that it was still expanding in the first series of fillings made from the first ingot. But a second series from the first, and all of the fillings from the second ingot were followed to the time of writing, and I feel certain that the expansion has ceased. In the fresh cut alloy the expansion continued forty days. The expansion in the fillings from the annealed alloy, which gave but nine points, was not completed until thirty days had elapsed. The mass from this alloy is also remarkable for its adhesion to the walls of the cavity. The fresh-cut alloy set so quickly that I had much difficulty in getting good fillings. With the annealed alloy this was much improved, but it still set very quickly. Otherwise the mass from the annealed alloy worked very well. The flow is decidedly decreased and is the least of the series of alloys, while the resistance to crushing is good. In the handling it gives strongly the impression of brittleness. This alloy requires more mercury than the unmodified alloys.

Aluminum.—The first effort to make a filling of the alloy containing 5 per cent of aluminum was a failure. It amalgamated nicely, forming a very white, soft mass, but it was soon too hot to handle. It ran the mercury up to 186 degrees F.; it then began to fall into a dark powder and soon disintegrated. The powder cohered a little with pressure. I finally made several fillings before disintegration began. The fillings have expanded enormously, 445 points in forty-three days. Other ingots were made with 1 per cent of aluminum. The heat of this mixture was not too great for handling. While in the scale pan the mass became visibly larger; on placing it in the palm of the hand a distinct crepitus of bursting gas bubbles was heard. When kneaded out the gas reformed. After several kneadings a filling was made. When first mixed the mass is white but grows dark with the generation of gas. The working property is so soft and the setting so slow there is time to spare. When annealed the setting is very slow and the mass is peculiar for its softness and apparent dryness. It also generated gas. Filling from the fresh-cut alloy gave 166 points expansion in forty-four days. It adheres to the tube and rounds up in the center. Fillings from annealed alloy gave twenty-five to forty-eight points expansion; the sample annealed in boiling water expanding most and that annealed one week at 130 degrees F. the least. These expansions were very slow, being stationary from the beginning of the second day to about the fifth day (all of fillings from the annealed alloy), when it began again slowly and continued forty days.

The studies now presented seem to me sufficient for the beginning of a radical improvement in the production of dental alloys by manufacturers.—*Dental Cosmos, December, 1896.*

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TOXEMIA DURING COCAIN CATAPHORESIS. By Dr. Henry J. Moore, Frankfort, Germany. As many dentists seem to doubt the possibility of getting the toxic effects of cocain by the method of cataphoresis, it may be interesting to place on record a recent experience of mine. I had occasion, in the mouth of a young man, to crown an upper lateral which had been broken by an accident. As I had to destroy the pulp I applied arsenic and removed it within a few hours, using cocain with the electric current. I was compelled to apply the cocain higher and higher up in the canals in order to complete the operation with perfect anesthesia. At the end of twenty minutes I noticed that the pupils of my patient's eyes were much dilated. I was working by gas-light and consequently did not observe any difference in his color. I asked him whether he felt all right, and he replied that he noticed an increasing sense of discomfort and was feeling very faint. I fortunately had no difficulty in restoring him by administering several strong doses of whisky, and was enabled to complete the operation. I had not used much cocain and had not applied it continuously. It has always seemed to me that the quantity used is no criterion, as one subject will support much less than another.

I subsequently discovered that in this particular case the foramen was abnormally large, thus allowing the more ready passage of the current and of the cocain.—*Items of Interest, January, 1897.*

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SENSITIVE DENTIN. By George F. Cheney, D.D.S., St. Johnsbury, Vt. Read before Anniversary Meeting of Chicago Dental Society, February 1, 1897. A year and a half or so ago I received an invitation to prepare a paper for one of our eastern societies. At that time a great deal was being said by a certain class of dentists regarding painless dentistry. My thought was, if these men can do all their dental operations painlessly, some of our leading professional men will have some knowledge of it. I conceived the idea of sending a list of questions to about seventy-five of the leading men in the United States, hoping that I might gain some information, if not solve the problem. I certainly got a great deal of valuable information, but the question is still unsolved.

Soon after sending out these letters my office was burned, together with all my dental journals and part of my books; consequently I gave up the preparation of the paper until an invitation was received from your society.

The questions sent out were as follows: 1. What is the cause of sensitive dentin? 2. Is it an abnormal condition? 3. Do the dentinal fibers directly anastomose with the nerve fibers of the pulp, or is there an indirect connection of the two established through the intervening reticulum of living matter? 4. Some have asserted that sensitive dentin was caused by an inflammatory condition set up by decay. Could this be true? 5. What influence does this inflammatory condition caused by decay have upon the dentin? 6. What causes the hypersensitiveness in buccal cavities of bicuspids and molars and labial cavities of the anterior teeth? 7. Is it the nearer proximity of the cavity to the pulp, or an inflammatory condition of decay increased by an extra amount of acid excreted from the inflamed gum? 8. What is your treatment of sensitive dentin? 9. What action do the medicaments known to the profession have upon the dentin? 10. May not the strong coagulants that are used by many have an injurious effect upon the pulp by being transmitted to it through the dental tubes? 11. Is there anything that can be safely used better than sharp instruments cutting lengthwise ot the fibers—that is, cutting toward the coronal portion of the tooth? 12. May not sensitiveness of the dentin be greatly increased by cutting against the fibers toward the cervical portion of the tooth?

About fifty replies were received, which greatly exceeded my expectations. A few of them I will give in full. Dr. S. B. Brown, Fort Wayne, said: As regards question 3, I can give an opinion only from long observation which favors the affirmative, as indicated by sensation in projecting dentin suggesting indirect connection. Dentin is, so to speak, living bone, hard and soft tissue combined; the tubuli animal, the dentin mineral. Sensation attends vital structure (tissue), thus sensation in dentin is normal from vitality in the tubuli contents, varying in degree of sensitiveness by varied conditions. The dentin has varying proportions of the mineral elements; that containing the least is most subject to decay, and at all times most sensitive. This leads to the questionable statement by some that decay favors exalted sensitiveness when defective calcification is alone the cause. We know that decay is not a cause when we grind sound dentin for crowns, etc. The cause of increased sensitiveness in labial and buccal cavities is due to the fact that these cavities are generally located on the cervix where there is a constriction and condensation of tubuli—vitality, a greater per cent of life in a given area. I should judge question 10 could be answered in the affirmative from the numbers flooding the country.

Dr. Brown gave prescription of Dr. C. N. Pierce which he used with some advantage:

℞	Cocain	gr v
	Carbolic acid	gr xx
	Chloroform	ʒss
	Muriatic acid	m. x
	Alcohol	ʒij

Also said great help came from manner of using instruments when forming cavities. Did not recognize much difference in the direction taken when excavating. It is unmerciful and unpardonable to use dull instruments or an engine that does not carry its points steadily.

Dr. Cravens, of Indianapolis: 1 and 2. It is a normal condition. It is due to incomplete calcification of the embryoplastic filaments projected from the odontoblasts; these possess the double property of conveying sensation similar to nerves, and are of course subject to irritation by external relations. The sensibility is normal, because when the pulp dies there is no longer sensation conveyed through dentin, and the embryoplastic matter existed from tissue of the sac.

3. I cannot say as to "direct" anastomoses. The dentinal fibers spring from and apparently return to the bodies of the odontoblasts, as disclosed by the microscope; the odontoblasts have nervous support from the system within the pulp. There are short connecting filaments between the odontoblasts that form a persistent reticulum, and doubtless prompt sympathetic or collateral activity of either function possessed by these remarkable bodies.

4 and 5. The idea that sensibility of dentin is due to decay is ridiculous; a tooth freshly broken is sensitive although there has been absolutely no decay. There may often be noted increased sensibility of dentin immediately underlying a tract of decay; but this is always in partially decayed tissue that has been deprived of its lime-salts, wholly or in part by action of the eroding agent of the decay. To be understood fully, let us start with a proposition that in living, healthy (normal) dentin there always is an equilibrium of constituents; any disturbance of this equilibrium results in abnormal conditions; disturbance of equilibrium of constituency may cause increased sensibility, diminished sensibility, or absolute loss of sensibility, without appreciably affecting the pulp of the tooth. This equilibrium of constituents is disturbed by inconstancy of the mineral elements only, which may be increased by imperfect nutrition resulting from protracted illness, or improper diet, or possibly starvation, because these elements are derived from external sources and

necessarily variable, while the organic or animal elements are persistent. Therefore, when under decay of the former class, for example, we find a leathery mass that in no respect resembles dentin, yet is exceedingly sensitive, far more so than solid healthy structure, we understand that it is the persistent animal constituent of dentin that has been deprived of its proper accompaniment of lime-salts. From such an example, and other points of observation of the phenomenal variableness of dentin sensibility, we draw the conclusion that with diminishing proportion of the salts of lime in dentin sensibility increases. On the contrary, in aged individuals who may retain their natural teeth we observe that there is a great reduction of sensibility, and even entire loss of it except very close to the pulp; that these are friable and retain metallic fillings with little satisfaction, showing a too great proportion of mineral elements. Therefore the second conclusion is that an increase of proportion of lime-salts, thus disturbing the equilibrium by hypernutrition, reduces the sensibility of dentin, and thus man is blessed with the insensible grinders of his declining years.

6 and 7. The notable sensitiveness in the buccal and labial regions is due to several conditions, partly structural and partly environal or regional; for instance, the tubuli of dentin are parallel for nearly their whole length, without being connected by anastomosing branches, in the regions of the cusps or incisive or occlusal parts, and when the enamel has been eroded or worn away so as to expose a section of such parallel tubes the irritability appears not to increase in direction of the pulp so much as laterally or across the tubes, nor yet so much as immediately under the enamel; in fact, the latter region seems to be the most sensitive of all, a condition that is attributed to the presence of the countless multiplicity of loops and anastomosing branches at that point. Another item relating to the buccal and labial regions is that they are nearly always protected from thermal changes by the enveloping mucous surface of the cheek or lips, and do not become accustomed to conditions of environment that the incisors are familiar with; for instance, air and fluids are generally tempered before they reach the buccal or labial faces of teeth. So also with respect to solid food.

8 and 9. I try to extract the moisture from the structure, and just in proportion as I succeed in desiccating tissue do I reduce sensibility therein. So far as I know, the medicaments sold to and used

by dentists for this purpose, so far as they are effective at all, operate by desiccation of tissue. I know nothing about hypodermics in this connection, although the quacks resort to them, with what success I cannot say. I have met with variable success with absolute alcohol, using a solution that contains 75 per cent menthol and 25 per cent phenol, either of which must be evaporated with warm air, and the teeth kept isolated from saliva. The absolute alcohol works the better, but should be preceded by commercial alcohol, as the absolute will otherwise cause pain—sometimes extreme pain. Cocain is totally ineffectual upon sensitive dentin. Measures for reducing sensibility are often not continued long enough to obtain good results. There is too much haste.

10. The current of transmission is from the center toward the periphera; besides, Dr. A. W. Harlan, of Chicago, an authority on therapeutical values, has declared emphatically (1895) that the coagulants are all self-limiting, and as their action is superficial the coagulum formed stops the agents almost at the point of contact; while they thus do no harm to the pulp, they do no good to the pulp or anything else. Coagulation is not antiseptization. 11. Sharp instruments are less dangerous than dull ones in skillful hands, and cause less pain.

12. This matter of manipulation rests with the operator, whether the preparation of a sensitive cavity shall be rendered bearable. It does not all consist in the direction cut by a sharp instrument, which only helps. It cannot be done painlessly by influence of drugs in local application, nor by desiccation. These are merely helps that enable a most excruciating operation to be performed with reasonably modified discomfort to the patient. Much may be accomplished by discreet impressions made upon the mind of the patient. The process, while a conversational one, is of a hypnotic character, but not profound nor of somnambulistic nature.

Dr. Guilford, of Philadelphia, says: Sensitivity of dentin is entirely normal, same as that of any vascular tissue. We have pulp, next to this the odontoblasts, and continuous with the latter probably dentinal fibrils going out to periphery of dentin. Dentinal tubes connect at various points along their length. Hypersensitiveness is of course abnormal, due to irritation caused by heat, cold, and foreign matter in cavity. In labial and buccal cavities we usually have the white or rapid decay in which only the lime-salts are dissolved out by acid and the remaining vascular matter is thus left exposed and unprotected, hence its greater sensitiveness. It is not due to greater proximity to pulp. Sensitivity in cavities I treat with warm air and sometimes with obtundent composed of cocain, chloral hydrate, etc. Sensitivity on surface, due to erosion or abrasion, I treat with nitrate of silver, caustic potash, or chlorid of zinc, parts being first dried and protected with rubber-dam. One or more applications of either of the three usually gives relief. Do not consider coagulants dangerous except when applied too near pulp. Have not found much difference in direction of cut.

Dr. Abbott, of New York, says: 1. Inflammation. 2. Yes. 3. Sometimes "Tomes fibers" are direct branches from the nonmedullated nerve fibers of the pulp. In other cases are last in the reticulum of living matter of the medullary elements at the periphery of the pulp. 4. Yes. 5. The entire dentin of the affected tooth becomes hypersensitive, and in the neighborhood of the decalcified portion the canalicula are very much increased in size, and the amount of living matter is found to be much greater than normal. 6. The necks of teeth are endowed with a greater amount of living matter than any other portion of them, consequently are more sensitive. 7. Restore them, chemically, to their normal (alkaline) condition by use of the bi. carb. of soda. 8. Some escharotics (zinc chlorid and caustic potash) destroy the living matter to a limited depth in the carious and disorganized dentin. Others, such as cocain, aconite, cannabis indica, camphor, etc., and their combinations, are supposed to benumb or render the living matter insensible to pain. 9. No escharotics (coagulates) used in the teeth are far reaching enough in their action to injure the pulp of a tooth through any considerable thickness of dentin. 10. Yes. 11. I have never noticed any special difference in the sensitiveness of a tooth by cutting in any particular direction.

Dr. Andrews, Cambridge, says: In answer to first question I will reply to second question and say it is an abnormal condition, as dentin itself, in a perfectly healthy condition, should not be at all sensitive, according to authorities.

To third question I would answer that it is not known just how a connection is brought about. I myself have no doubt but that there is a connection in some way. Sections that are very thin show nerve fibers that are very fine. Dentin is a difficult substance to demonstrate these fine fibers if there are any in it. I have seen fine nerve fibers from the pulp running between the odontoblasts as though they were to enter the dentinal canals, and that is as far as I have been able to trace them. Tomes mentions the remarkable specimen of Dr. Dentz, of Utrecht: "These, which were cut from embryo while about half the thickness of the dentin was formed, show pear-shaped bodies arranged with regularity a short distance within the border of the dentin, the smaller end being directed toward the pulp and being at their small end connected with one or more dentinal tubes. These pear-shaped bodies have two or three large nuclei, and present a close resemblance to some forms of nerve-end organs." In regard to a reticulum of living matter, the only living matter is from the fibers or their branches, Heitzmann's reticulum being only a fibrous connective tissue, scaffolding, which is calcified with the matrix.

4. I should say the sensation was caused by irritation and not by true inflammation. We cannot have true inflammation in tissue like dentin. This irritation is undoubtedly caused by foreign substances, the action of acids, etc. 5. I do not believe there is any true inflammatory condition. The irritated or sensitive condition caused locally by decay may make the whole tooth more or less sensitive. 6. The exposures of the fine terminating ends of the dentinal fibers to irritants, acids, etc. 7. Outside irritants, acting on the most sensitive portions of the tooth, may be acids or anything else. 8. I get the cavity dry, use sharp instruments, cutting with the direction of the fibers with a quick, sharp stroke. 9. I cannot answer fully; undoubtedly some of them are injurious. 10. I should say some of the coagulants, such as chlorid of zinc, might have an injurious action on the pericemental tissue. 11. Sometimes I find cocain and glycerin mixed to a paste to be very good. 12. I would say yes, decidedly so, although any cutting in that zone of softened tissue caused by the acids given off by organisms will act on all the fibrillæ imprisoned in the softened mass, whatever way you cut. The irritation of diseases of the sockets, pyorrhea, may be transmitted to the whole substance of the dentin, causing an irritated and sensitive condition. In fact, any trouble of a sensitive and painful nature may be transmitted to the teeth. I believe the sensitive condition of the teeth is more often caused by a diseased state of the general condition than is ordinarily supposed,

the teeth sharing their part of this abnormal condition with all the other organs of the body.

Dr. W. C. Barrett, Buffalo, says: 1. An irritated condition of the protoplasmic elements of the dentinal fibrillæ. 2. Necessarily, yes. 3. It is not a direct anastomosis or continuous condition. 4. In a modified degree. Protoplasm does not take upon itself the usual inflammatory conditions of fully organized tissue, but its condition is materially modified. 5. It is at the junction of the enamel and dentin and the cementum and dentin; and the sensitive places are often at the location of the so-called interglobular spaces, where there is an excess of living matter. The proximity of the pulp also increases the irritation due to thermal changes especially, and the whole may be influenced by a degenerated condition of the mucous follicles, which exist in great numbers at the cervical portion of the mucous membrane. 8. The conductive power of the dentinal fibrillæ may be suspended by paralyzation. This may be accomplished by coagulation, partial or complete, by desiccation or by refrigeration. Certain remedies also have the power of modifying their conductive or their receptive power. I depend mainly upon desiccation, and combine with this modifying sedatives. I also use prophylactics given internally. There are a great many remedies which act at times and in certain cases upon dentin. It is impossible to set them down here, because to make their use intelligible some statement must be made of the condition in which each is applicable. Probably in connection with warm air I use the essential oils more than any other one thing. 10. Undoubtedly, yes. 11. Nothing better, but other things may be used in connection with good results. 12. It may be increased by any rough treatment.

Dr. E. T. Darby, Philadelphia, says: 1, 2 and 3. I think it a perfectly normal condition. All real tissues with rich nerve supply are sensitive. The fibrillæ undoubtedly have an intimate relationship with the pulp, and any injury to the fibrils is conveyed to the pulp. Healthy dentin is sensitive, but not to the same extent as diseased dentin (decayed dentin). 4 and 5. I don't believe in the theory of inflammation in the dentin. We cannot have inflammation without blood vessels, and there are no blood vessels in the dentin. The fibrils in the dentin are nerve fibrils and are a prolongation of the odontoblastic cells upon the surface of the pulp. 6. I have always looked upon the hypersensitiveness of the dentin as dependent upon the amount of acid present in the decayed structure. This hypersensitiveness may be diminished almost instantly by putting in the cavity of decay a little bicarbonate of soda before beginning to excavate. Cavities along the labial and buccal surfaces are often more sensitive because they are bathed in an acid mucus from the gingivæ. It is always well to apply a little bicarbonate of soda before beginning to cut these, especially if the rubber-dam be not first applied. 7. I don't think the nearness or distance from the pulp has anything to do with the excessive sensibility. 8. My treatment for sensitive dentin is the following: First, apply rubber-dam; pack into cavity for a moment bicarbonate of soda; wipe the cavity with absolute alcohol; dry thoroughly with warm air (not hot air); then put into the cavity for a few moments "Robinson's remedy" (equal parts carbolic acid and caustic potash); dry the cavity again and go ahead with sharp excavators. When I have done this I have very little complaint on the part of my patients. 12. I don't think cutting from the pulp instead of toward it has anything whatever to do with the promotion or abuse of pain in excavating. Somebody made such an assertion years ago and it has been handed along from one practitioner to another without question. There is no physiological reason why it should be true, and my experience and observation convinces me that there is nothing in it but theory.

If time permitted I would like to give several more of these letters.

It will be noticed all but three give sensitive dentin as a normal condition. Drs. Andrews, Abbott and Barrett say it is an abnormal condition. While I am not prepared to state from a scientific standpoint, I believe that all disease is caused primarily by an irritant. Histology and microscopy do not demonstrate that there is an actual connection between the odontoblastic fibrils in the tubules of the dentin and the nerve fibers of the pulp, therefore the assumption would be that there is none. From an operator's standpoint one would assume that there is some connection. I have found very sensitive dentin when trimming a perfectly sound tooth. What this sensation is I do not know; probably irritation and contraction of the dentinal fibers; neither do I know what the connection is between the dentinal fibers and the nerve fibers of the pulp, but that there is some connection I am sure.

Dr. Bodecker says: "Since we know that nonmedullated nerve fibers have the same structure as the dentinal fibers, we must conclude that both the nerves and dentinal fibers are made up of living or contractile matter, the contraction of which is facilitated by the presence of vacuoles. For according to modern researches the conduction of sensation centripetally and of motion centrifugally is very probably instituted by the contraction of the living matter.''

He also states that at the periphery of the dentin (the interzonal layer) is the beaded appearance of the dentinal fibers, lacking vacuoles in this situation. The fibers are bifurcating, as is well known, and becoming more and more delicate correspondingly exhibit more and more beads.

The reticulum into which the lateral conical offshoots of the dentinal fibers inosculate is extremely dense—much more so than in the rest of the dentin. The densely reticulated zones usually correspond to the depth of the bifurcation of the dentinal fibers. The presence of this dense reticulum of living matter evidently explains the fact that the interzonal layer between enamel and dentin is so extremely sensitive.

Sensation may be greatly increased by the presence of acids in cavities of decay, especially in certain classes.

In buccal cavities of the molars and bicuspids and labial cavities near the gum in the anterior teeth we find greater sensitiveness, being caused in part by there being a greater amount of living matter. This is proven pretty conclusively by Dr. Black in his experiments, published in the *Dental Cosmos*, 1895, where he says: ''This revealed the fact that the dentin of the crown of a tooth is generally heavier in proportion to its bulk, is more dense than the dentin of the root,'' weight gradually diminishing from crown to apex.

To my mind the hypersensitiveness of these cavities is mainly caused by an acid excreted from the gum, usually inflamed, keeping the cavities continually bathed with it, destroying or breaking down the mineral constituents of the dentin, and leaving an extra amount of irritated living matter. Any alkaline substance in or taken into the mouth is kept from these cavities by the close contact of the cheek and lip.

The treatment of sensitive dentin has been much and varied, also medicaments used are many and varied. None of the ways of treatment or medicaments used seem to be satisfactory in all cases. Treatment may be systemic or local, or both. Locally it would be either to paralyze the living matter of the dentinal tubuli, which can be done with such medicaments as the anesthetics, like chloroform, ether, alcohol, cocain, the essential oils, and electricity, or destroy it by the use of such medicines as the coagulants, like carbolic acid, caustic potash, chlorid of zinc, etc. The coagulants are self-limiting, as has been well proven by Dr. Harlan and others, consequently they coagulate but a slight depth and are harmless.

My own treatment is to apply rubber-dam, pack the cavity with bicarbonate of soda for a minute or two, wash out with alcohol and evaporate with warm air, not hot, using the warm air until dentin is dry. If this does not put the dentin in condition to be worked with sharp instruments without much pain, I place in cavity a pellet of cotton dipped in Dr. Black's 1, 2, 3 mixture, or some of the essential oils, tannin and glycerin paste, cocain and glycerin paste, or Robinson's remedy, as the case may be, drying out with warm air. This treatment in a majority of cases works very nicely. In mouths known to be strongly acid, or where there are labial or buccal cavities, I have the patient use milk of magnesia as a wash for a few days before the operation. With extremely nervous patients bromid of potassium in 10 or 15-grain doses, three times a day for three or four days, will in many cases work like a charm. I prefer bromid of potassium to morphin and the coal tar derivatives, although they often benefit greatly.—*Dental Review, February, 1897.*

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PECULIAR PATHOLOGICAL PERCEPTIONS. By J. D. Patterson, D.D.S., Kansas City, Mo. Read at Anniversary Meeting of Chicago Dental Society, February 1, 1897. The particular peculiar pathological perception to which I wish to direct your attention in this paper is the claim which has in recent years been put forth by certain pathologists belonging to our profession, and which may be briefly stated as follows: That "the inflammatory stage of true pyorrhea alveolaris primarily begins in tissues on the side of the root near the apical extremity, and secondarily advances in the very large majority of cases toward the gingival borders," and that "the cause of this inflammation or pericementitis is the plastic exudation from the blood-vessels freighted with salts, which in their deposition and crystallization upon the cementum of the root exert the influence of foreign bodies and act as irritants." "That the chemical nature of these salts indicates a condition of the blood in which there is an excess of uratic salts and uric acid." This is known as the uric acid or gouty diathesis, which is prevalent in gout and rheumatism, and the pathologists referred to ascribe this condition as the cause of the diseases commonly known as Riggs' disease, pyorrhea alveolaris, phagadenic pericementitis, alveolitis, etc., etc.

In discussing this subject your attention is directed to a well-known fact which is stated in text-books upon the practice of medicine, which is as follows—I quote from the latest edition of Flint's Practice of Medicine: "It has often been too much the custom to consider all affection in persons subject to gout as of a gouty character, and the gouty diathesis is often considered to exist upon insufficient data." For many years pathologists in the medical profession have persistently saddled upon a gouty diathesis nearly every trouble known to be the result of perverted nutrition, and a few men in the dental profession, not to be outdone in the fascinating pastime of speculative etiology and pathology, have saddled upon the well-worn hack of a "gouty diathesis" nearly all of the ills which manifest themselves in the oral mucous membrane, and in the investment of the roots of teeth. The study of perverted nutrition has seemed to cause perverted perception, and as an easy road out of the dilemma they have followed in the wake of their medical brethren by giving a gouty diathesis credit for all oral diseases where, in their minds, diagnosis seemed to be doubtful.

Some years ago the writer was one of a class in the study of physics. For several lessons the subject was that of "gravitation," until all were supposed to perfectly comprehend the law upon that point. At a "quiz" shortly after one of the class was asked by the teacher why a kite rises in the air? He promptly responded: "On account of gravitation!" It seems to me that some of our brethren have adopted an apparently easy explanation of the etiology and pathology of pyorrhea alveolaris, and everything is laid to gout for the reason that their minds are full of it, just as was the student's upon the subject of gravitation. Although three years have scarcely elapsed since these theories were first exploited by Drs. Marshall, Pierce, Burchard, Kirk, *et al.*, yet the writer has been confronted lately by statements of patients who came from unknown operators, claiming that they had been told that the disease of the gums from which they suffered was occasioned by gout, thus conveying the impression that local treatment would be unavailable, and that nothing could be done (I might add parenthetically that nothing was done except to send such patients to a physician), yet the cases were and have proved perfectly amenable to local treatment.

Ever since the advent of a better understanding of pathological conditions—largely brought about by Virchow and the well-known cellular theory—the elucidation of abnormal human complaints has gone along the lines of reason and science. The old "humoral pathology" has given place to a reasonable pathology which traces from cause to effect and from effect to cause in logical sequences, but it seems to the writer that at times this reasonable way has perhaps been forgotten.

It shall not be our attempt to deny the morbid and predisposing influence of the gouty and rheumatic diathesis in the progress of pyorrhea, but to point out that it is not the exciting local cause on account of deposits upon the apical portion of the roots of teeth, and that these deposits do not precede the disease. That pyorrhea is not *per se* "a local manifestation of a constitutional condition."

Even in gout authorities differ as to whether the deposit precedes or is a result of inflammation from impaired conditions of nutrition and consequent abnormal conditions of the blood. Ebstein, an authority on gout, in Flint's Practice of Medicine is quoted as saying that "The tissues which are the seat of urate deposits are in the condition of coagulation necrosis," and that this necrosis precedes the deposition of urates and is caused by the abnormal condition of the blood. He also says: "An area of inflammation exists around the focia of coagulation necrosis."

Dr. Burchard, in *Cosmos* (April, 1894) strangely quotes from Ebstein in support of the claim that inflammation follows instead of precedes the deposit, when Ebstein clearly states his belief to the contrary. In the article by Dr. Burchard just referred to, Ebstein is quoted as follows: That "gout is a nutritive disturbance, first leading to necrosis, and this followed by a deposit of urates in the necrotic area."

Garrod, another authority upon gout, says: "A single attack suffices to cause a certain amount of the urate deposit in the affected joint." These writers who have long been authority upon the subject of the uric acid diathesis and its manifestations should surely justify the belief that in pyorrhea, even if the result of a gouty diathesis, the deposits are secondary.

The statements of writers in regard to the deposits having been found upon the apical portions of the roots of teeth without any precedent lesion, have no doubt been made with all candor and with a desire to arrive at a scientific explanation, but this testimony, it is acknowledged, is difficult to secure. The celebrated "lateral incisor," in possession of Dr. Kirk, "upon which the pericementum had been destroyed from the apex to one-half way to the enamel border, the remaining portion apparently intact, certainly so at the gum margin," and upon which at a point one-fourth of an inch from the apex was found a deposit, and other positive, but so far as we are informed, somewhat dogmatic statements of serumal deposits having been observed without preceding lesion either in the gum tissue, or pericemental disturbance from pulp abnormality, or traumatic pericemental injury, is scarcely scientific proof, when upon the other hand scores of operators having had hundreds of cases of pyorrhea in all stages testify that solution of the gum margin and absorption of investing processes have in every case been found where the serumal deposit appeared.

I have myself observed cases where the deposits were present without "apparent" loosening of the gum, but upon closer investigation have concluded that at one time there had been suspicion of gum inflammation, which had passed away in removal of the irritant and the gum had probably reattached. The exceptions were in cases where pulp irritation, or pulp calcification, had created a necrotic condition around where the deposit was observed, the gum at the gingival margin being entirely undisturbed.

I desire now to direct your attention to another point, viz., authorities, as a rule, agree that the uric acid deposits are found in territory where the blood supply is meager and the tissue nonvascular. Now, the peridental membrane is very vascular, and reasoning from accepted authority, the urates would not be deposited in the vascular tissue of a root's investment, but in territory where "coagulation necrosis" would be likely.

C. S. Tomes says: "The alveola dental periosteum is richly supplied with nerves and blood-vessels."

Dr. G. V. Black says: "The blood supply of the peridental membrane is very bountiful in the young, and, although diminished as age increases, the vessels remain abundant."

It follows that until the normal nutrition of these parts has been destroyed by a precedent irritation the deposit of urates would not be likely to occur. In vascular tissues the blood forcing nutrition into the tissue ought to effectually prevent a stoppage or coagulation, which is necessary to the formation of deposits. We therefore should expect to see the vascular investment of a tooth free from such accretions.

I will now direct your attention to the anatomical relation of the parts. They do not afford the opportunity for the depositions which are found in the classic seats for gouty deposits, viz., the articular ligaments, tendons and sheaths, bursal sacs, the kidneys, the skin, the external ear, lungs, intestines, etc., etc. In all these positions, where it is acknowledged gouty deposits may be found, not one but what presents, even to the naked eye, a convenient place for the reception of abnormal urates, but when we examine the dense tissue about the root of a tooth we cannot but wonder what a peculiar conception it is that concludes that in normal relation of these bones there can be precipitated from the rapidly flowing blood current calcic material upon the cementum of a root.

I now show you a green lower maxilla, upon the right side. I have cut through bone and root of the second bicuspid about two-thirds way from the normal gum margin to the apex, in order to give an object lesson to those who are so long from the dissecting-room that they may have forgotten the absolute density of these related parts. Without a powerful glass no space can be seen between cementum and pericementum. Can you believe that uratic salts are here deposited? I cannot; there is no space for such deposits. In these "peculiar conceptions" under consideration there runs through the arguments brought out in support of the theories a convenient bypath in which refuge is taken. This is found in the expression "true pyorrhea." Driven into close quarters they escape by saying, "Ah! your cases were simply inflammation from salivary calculus or other local irritation, and not true pyorrhea at all!" In other words, any pyorrhea where the uric acid diathesis is not found, and the disease is not destructive and stubborn, is not their beloved pyorrhea at all, but simply a common vulgar case of local trouble consequent upon some irritation to the gingival margin of the gum.

This practice of designating the different stages of the same disease as a difference *per se* is exasperating. It is acknowledged even by the supporters of the uric acid theory in pyorrhea that local symptoms are nearly identical, whether the disease is entirely local or constitutional, and it is beyond our comprehension why it is not still pyorrhea alveolaris, even if the causes are complex or simple, when the symptoms and results become identical.

As well might we say that other affections of the mucous membrane, such as catarrh or diphtheria, in their different stages, should receive a new name, as "true" catarrh or "true" diphtheria, if aggravated by complex local or systemic predispositions.

The principal points I have endeavored to make clear may be summed up as follows: 1st. That in gout, authorities differ as to whether the deposits follow or precede the inflammatory action. 2d. That vascular tissues, such as the pericemental membrane, are not subject to the gouty deposits. 3d. That the dense anatomical structure of the parts about the root of a tooth do not exhibit the necessary bursa or the necessary character of tissue in which gouty deposits appear, unless precedent lesion has caused such space.

These conclusions, if true, all strongly argue against what I have called the "peculiar pathological conceptions" of Dr. Pierce and others upon the subject of pyorrhea alveolaris and the gouty diathesis.—*Dental Review, February, 1897.*

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GERMAN GOVERNMENT AND INDIVIDUAL HEALTH.—If national health is national wealth, then individual wealth is the politically important unit of measure. This is emphasized in an interesting way in the introduction of a "Handbook on Health" just issued from the imperial department of health of the German government. It says: "The health of man is a precious possession. Its loss causes harm not only to the individual but also to the community. The individual whose health is impaired suffers discomfort or pain, or both. He loses his ability to work or to earn an honest livelihood, which eliminates all enjoyment and pleasure of life. He must incur expense before he can regain his original health, and anxiety and poverty are usually the result both to himself and family. By the decrease of his and their productive labors, and their consumption as well, the community suffers loss in its industrial progress and brings about an expense in the support of the poverty-stricken home; and when, as it not infrequently happens, the sick man is suffering from some infectious disease he becomes a danger to his neighbors and may be the cause of a national epidemic or danger."

The extent of the loss arising from the disturbance of health can be estimated from the returns of the Workingman's Sick Clubs of Germany. In 1891, out of a total membership of 6,500,000, more than 2,000,000 cases of illness were reported, each of which averaged seventeen days in duration. These clubs expended for medical aid $22,000,000. Now it may be assumed that among the remaining 44,000,000 Germans, 24,000,000 of whom are old enough to work, the cases of illness were equally numerous and as long continued; the expense caused by sickness in Germany in 1891 will not be placed too high at $120,000,000. The loss incurred by stoppage of wages is not included in the above figure. The preservation of health and promotion of happiness is the aim of this governmental department. Among the tasks which it proposes are "prevention and limitation" of sickness and the "preservation and prolongation" of the ability to work, and of man's life in general.—Translated by Dr. B. J. Cigrand, from *Journal Der Heilkunde*, *January*, *1897*.

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MORTALITY AND ANESTHETICS. By Dr. Gustav Preiswerk, of Basel. Concerning the dangers accompanying the administration of general anesthetics the following table well shows; it is taken from the publication of the recent Congress of the German Society of Surgeons, held at Berlin:

With chloroform	1 death in 2614 administrations.
With ether	1 death in 8431 administrations.
With chlorf. and ether	1 death in 2891 administrations.
With ether and alcohol	0 death in 1381 administrations.
With bromoethyl	0 death in 2151 administrations.
With pental	1 death in 219 administrations.

The statistics relative to the latter three are very meager and an exact proportion can not be given. The greater number of cases in the above report came from dental records and have been incorporated in the statistics of general surgery.

Local anesthetics received some attention and the anodyne which attracted some consideration was the active principle of tobacco—nicotin. The use of the cigar seems to have originated in America, since we are informed that Columbus observed cigar-smoking Indians. The Chinese, according to ancient drawings, must have known the use of tobacco, as the pipe was a known instrument employed in smoking. As with all narcotic agencies, tobacco found many votaries, and suffered through edicts and legislation. Among the latter we find Pope Urban VIII's bull prohibiting the use of tobacco; and later, in 1634, the Russians were forbidden its use under penalty of losing the nose, and in some cases even life. In Switzerland a heavy fine and penalty were exacted from all who indulged in the habit of smoking. Yet nothing seemed able to limit its use and gradually it has found its way to all parts of the earth. Not only do men resort to it as a smoke-narcotic, but its sleep-producing effects are gotten from both snuffing and chewing. Tobacco is the first agency of enjoyment which is of real interest to the dental profession. The smoke of tobacco deadens and perfectly destroys all germs which may be present in all fungus growths, and exerts an antiseptic influence on various lower forms of life, especially the boletus. Redner observed that people who smoked tobacco or used it in any form possessed better teeth than those who did not use the weed. Further study along this line may disclose to us that nicotin, although recognized as a poison, may under some form be beneficial in dental science.—Translated by Dr. B. J. Cigrand, from *Schweizerische Vierteljahrsschrift fuer Zahnheilkunde, January, 1897.*

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VULCANITE VS. GOLD-CLASPS. By Dr. C. Jung, of the Heidelberg University. The fact that vulcanite clasps are productive of ring-like caries has attracted attention as to the real cause of this disturbance, and the further determination of why like injurious results do not come from the use of metallic clasps. There is to some extent caries resulting from gold-clasps, but it is not of so destructive a character. The decay does not begin so early, nor is it so intense, and the disturbance is more of a mechanical than of a chemical nature.

The exact cause for this difference in caries coming from both vulcanite and metallic clasps has not as yet been fully explained. In the past it has been contended that in the employment of metallic clasps there is ever a small space between the clasp and the natural tooth, no matter how carefully the clasp has been produced, and in consequence there is formed a favorable place for lodgment and dislodgment of food—acting as self-cleansing; while with the tight-fitting vulcanite clasp the food once in the minute interspace, all conditions are favorable for disintegration and fermentation. And further, the food is less likely to stick to the smooth surface of the gold clasp than to the rough and porous sides of a vulcanite clamp.

Both of the foregoing theories must be discarded as not fully answering the query, since the difference between a correctly fitting metallic clasp and a carefully constructed vulcanite one is so very slight as not to seriously enter into the problem; and further, the rapid decay is not avoided when the contact surface of the vulcanite clasp is perfectly smooth and polished, so that we must seek further if we hope to arrive at the truth.

That the metals, and especially the royal metals, antagonize the workings of the lower forms of life, and that they materially limit their growth, are facts well established, yet the real cause of this circumscribing influence of silver, etc., has not yet been clearly demonstrated. But it appears that a metallic salt of antiseptic powers is the direct result of the culture media, and that this salt resulting from the presence of lactic acid is self-limiting to the bacterial product, and hence restricting to the activity of the bacteria.

The most recent investigations of the eminent Dr. Crede, of Dresden, demonstrate that some of the lower forms of life under certain conditions produce acid products which, when brought in contact with silver or gold, are sufficiently strong to affect the metal and produce a metallic salt. If these deductions are correct, and we have no reason to doubt them, then we in a measure begin to understand why metallic clasps produce less harm than the vulcanite ones. In the future we will place a thin strip of gold on the contact surface of the rubber, and so produce a vulcanite clasp with a metallic lining. I have suggested this as an article intended to awaken investigation in this direction, and if it accomplishes this the purpose has been fulfilled.—Translated by Dr. B. J. Cigrand, from *Journal fuer Zahnheilkunde, January, 1897.*

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FARADIMETER IN DENTAL PRACTICE. Of late considerable attention has been given to Dr. Edelman's recent innovation—the faradimeter—with which he registers "neural-endurance." Numerous tests are being made to ascertain the relative power of endurance between men and women, and the most interesting experiments with this new instrument come from Dr. Ottolenghi, who discloses what may seem incredible data. He asserts that women are less sensitive to pain than men, and that this sensitiveness is less in early years than later in life; that sensitiveness increases to the twenty-fourth year and decreases after that period. His facts he has gathered from close study of 682 women, and he is certain that the power to endure suffering varies according to age. Endurance of pain has a much broader limit in women than men, reaching a maximum far beyond the masculine limit, and he ascribes this to the "greater suggestibility" of the female sex. General sensibility reaches the highest point at about the age of 19. He concludes that sensitiveness to pain is in close relation to the "psyche," while general sensibility depends on the peripheral nerves. He further states that he considers woman's insensibility to pain as a true sign of her inferiority to man, since the uncivilized and the degenerates are found to be insensible to pain. He attempts to prove a connection between this latter characteristic and the longevity of woman.—Translated by Dr. B. J. Cigrand, from *Centralblatt f. Nev. u. Psychologei, 1897.*

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BLEACHING TEETH BY MEANS OF SODIUM PEROXID APPLIED CATAPHORICALLY. By Henry Barnes, M.D., Cleveland, Ohio. Clinic before Ohio State Society. The case presenting was a right superior central incisor badly discolored. The root-canal had been filled about two-thirds of its length. The process of bleaching was carried on as follows: A quantity of sodium peroxid, in powdered form, was placed within the pulp-cavity and the unfilled portion of the root-canal. The positive electrode was then applied and the contents of the cavity moistened with water. In this case the voltage was carried as high as eighty, indicated on the dial, and the current was continued for from ten to fifteen minutes altogether. The cavity was next filled with a 10 per cent solution of hydrochloric acid, to neutralize the sodium peroxid, then rinsed with bicarbonate of soda solution to neutralize the acid. The cavity was then lined with paraffined white wax and filled with cement. Result very satisfactory.—*Ohio Dental Journal, Feb. '97.*

* * *

ELECTRO-PLATING OF CROWN AND BRIDGE WORK. By W. H. Hayden, D.D.S., Youngstown, O. Among the various applications of electricity to the practice of dentistry, I consider as not the least in value the electro-plating of crown and bridge work with pure gold. In the use of coin gold it is quite impossible to get the old or yellow coins and those of more recent coinage have that objectionable reddish color which will oxidize in almost all mouths. Even the ordinary 22k. plate will discolor in many mouths, but pure gold in very few.

To a pint of distilled water add 30 grains of photographer's chlorid of gold and about 60 grains cyanid of potassium. When plating suspend in solution from positive wire a plate of pure gold, at least double the size of article to be plated, and from the negative wire the finished crown or bridge. Turn on current from a half minute to one minute and remove crown and rub it with bicarbonate of soda. Repeat the operation until the desired result is obtained; usually two or three times suffice.

It is my plan to leave the crown in this condition instead of burnishing, as having a dull rather than burnished surface, it is far less conspicuous in the mouth. Such plating on surfaces not exposed to wear in mastication will wear indefinitely, and wear from mastication will in itself keep it bright.

I use the current from the 110-volt Edison current with a resistance of two 50-volt 16 C. P. lamps in series, which gives me about one ampere. I also have a 10-cell storage battery for cataphoric use giving 20 volts which does the same work, using a 20-volt 6 C. P. lamp as resistance. Those having cataphoric appliances using dry cells can readily adapt that current by using the proper resistance. *Ohio Dental Journal, February, 1897.*

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NITRATE OF SILVER IN ROOT-CANALS. By Charles D. Cheney, Hoboken, N. J. I have been experimenting (if a steady reliance may be so designated) with silver nitrate for over two years. I have used it in root-canals during about that period, and have come to believe that in it we have as near an ideal as we are likely to get. I have not, before the publication in your November issue, seen or heard silver nitrate suggested for root-canal treatment; it was, however, but a short step for me from the use of it in an ordinary cavity of decay to use in the canals. I have used it with satisfaction in ordinary cavities for a number of years, and during the period of *canal* use my satisfaction has been infinitely increased.

I may say I consider pulp-extirpation and canal-filling more scientific than any method of so-called pulp-"capping," especially since silver nitrate makes the former operation practically successful and certain. I have never seen any objectionable effects from its use in pulp-canals, or I believe I may say *any* "effects." The use of the nitrate when the pulp is but thinly protected by dentin is not to be tolerated, but I have not observed any irritation to the pericementum when the canal may have been large and the walls thin.

An important improvement which I very early discovered and have used exclusively since was the substitution of an alcoholic saturated solution of silver nitrate for the customary aqueous solution. This is an improvement which I consider essential to thorough success. Alcohol dissolves less of the nitrate, but the rapid evaporation compensates and makes a less quantity equally efficacious; the alcohol also penetrates farther and quicker than water; a warm air blast or even a few moments' delay, and the natural body heat gets rid of the solvent and also any small degree of moisture which may be present, thus leaving a deposit of microscopic nitrate crystals to continue the effect very slowly as the natural moisture returns to the immediate vicinity. Rather strange, it seems, but there appears to be within the canals none of the usual discoloration of silver nitrate, except in the presence of organic decomposition, when the precipitation of black oxid or sulphid is instantaneous. Decayed dentin is not so affected, though it often becomes slightly yellowed.

The silver nitrate seems to take such thorough care of affairs within the canal that it would seem less important what filling is used, provided it be non-absorbent and unchangeable. I have good success with gutta-percha, avoiding most religiously, however, all that which has any considerable "toughness"—a quality which is incompatible with its successful use in any way.

The painting of the surrounding gum with strong tincture of iodin, immediately after the filling, contributes in a large degree towards success and the comfort of the tooth, as I believe. Occasionally the slight soreness due to the operation may persist over twenty-four hours, in which case I repeat the application of iodin or advise capsicum plasters, according to circumstances.—*International Dental Journal, February, 1897.*

CHLORID-OF-ETHYL SPRAY directed into the alveolar cavity stopped severe hemorrhage after tooth extraction. The cavity was then filled with cotton wet with tincture of hamamelis.—*Gaz. Med. de Liege.*

Letters.

CORRECTION BY DR. BOICE.

PHILADELPHIA, March 7, 1897.

To the Editor of the Dental Digest,

DEAR EDITOR:—I see in your February number you make the following statement: "We are glad to welcome to our ranks *The Stomatologist*, a new and bright monthly journal published by the Alumni Association of the Philadelphia Dental College."

The Alumni Association of the P. D. College has no connection in any way with said publication. A copy of *The Stomatologist* was handed to me to-day, and on its front cover it states—"Published by Leo Greenbaum, in the interest of the Alumni of the Philadelphia Dental College." The truth of this statement might be questioned. Yours truly, ALONZO BOICE,

President of Alumni Association of Philadelphia Dental College.

RECENT IMPROVEMENTS IN FILLING TEETH.

CHICAGO, March 5, 1897.

To the Editor of the Dental Digest,

DEAR DOCTOR:—Your editorial under the above title in the February issue of the DIGEST, directing attention to Dr. Black's paper before the recent meeting of the Chicago Dental Society, would seem to call for some comment at this time. Considerable emphasis has in the past few years been given to the necessity of practicing extension for prevention in the preparation of cavities, and now that the profession are in a fair way to profit by a judicious observance of this principle it would seem ill-advised to have editorial influence directed to bring it into discredit.

Some of the statements in the editorial were evidently made for the purpose of calling out discussion, but I fear that many of those who read it may not readily see between the lines, and are therefore likely to accept the teaching as in accord with your personal convictions. This latter surely cannot be the case, for a practitioner of your experience must be aware that to practice along the lines indicated, viz., "After removing the decayed portions, to cut away only so much of the tooth substance as would allow us to anchor the filling properly," is to invite oft-recurring failure. One of your reasons given for cutting so little proves fallacious if reasoned to its logical conclusion. Which is the surest economy to the patient—to have teeth filled in such a way that eventual failure is almost certain to occur, or to have them filled by the method which you admit "will prevent recurrence of decay of the proximal surfaces more surely than any other," even though a larger fee is paid for the latter operation? Good dentistry is the cheapest dentistry in the end, and you and I and all other earnest practitioners should strive to impress this upon our patients.

Your estimate of the length of time necessary for the insertion of these large contour fillings is altogether too high. No competent operator need consume from "four to six hours" to put in the largest contour filling, to say nothing of the average one of everyday practice. Modern methods and appliances have shortened up these operations, till to-day they are less formidable by half than they formerly were. Not only that, but the work is being done more perfectly than it ever has been.

No, your kind of teaching will not do. There are enough temptations to make the average practitioner fall short of an adequate thoroughness in his work, without the editorial dictum that something less thorough than the most thorough is the proper line of procedure. We cannot always—I sometimes think we cannot often—reach the ideal in our work, but the sooner we recognize the ideal and the more earnestly we strive to attain it, the better it will be for us and our patients. Fraternally yours,

C. N. JOHNSON.

ST. LOUIS LETTER.

ST. LOUIS, March 18, 1897.

To the Editor of the Digest,

DEAR DOCTOR:—At the regular meeting of the St. Louis Dental Society, held March 2, Dr. M. C. Marshall presented a paper setting forth his practice in regard to the first inferior molar, distal cavity, pulpless. He recognized the fact that it is very difficult to treat and perfectly fill the anterior root through the distal cavity, and that too frequently a portion of broach or drill is left in the canal, and our patient is dismissed with an uncertain feeling on the part of the dentist. And again, in order to gain access to the anterior canal at all, it is customary to cut through the grinding surface from the distal cavity. This weakens the remaining walls to such an extent that fracture is almost inevitable, the fracture usually extending above the gum margin and involving more or less of the root. To prevent this accident, and to obviate the difficulty of treating the anterior canal, Dr. Marshall advocated cutting off the crown at once. This renders the canals perfectly accessible, and with a perfectly adjusted crown the tooth is permanently serviceable.

Dr. William Conrad had been invited to open the discussion, but another important engagement preventing his attendance he sent his remarks in writing. He did not agree with Dr. Marshall that this practice was advisable or even allow that it was excusable; that to cut off the crown of a tooth in order to gain access to any root-canal was bad practice; that it was simply a question of skill, and skill could never be gained by avoiding hard work. He thought that Dr. Marshall overestimated the tendency of these teeth to fracture, and that the percentage of them that do break down is too small to warrant such heroic treatment of the entire class, and furthermore, that as the difficulty of root-canal treatment and the liability to fracture are not confined to any one class of teeth, the better practice is conservative.

Dr. Bartlett opens from the anterior surface, considering this better practice than cutting through the grinding surface to gain access to anterior canal. He has never considered these cases so troublesome as the superior molar with the anterior buccal canal.

Dr. Fletcher took issue with both Drs. Marshall and Conrad on some points. The large majority of these cases he built up with amalgam after filling the pulp-chamber with oxyphosphate, and these teeth so treated lasted from five to fifteen years, and a split tooth was the exception. His advice was to cut away tooth to good margin, build up with amalgam and then crown when the tooth breaks down. You have then lengthened the life of the tooth just the length of time the amalgam filling lasts. Another point is this—be the man ever so skillful, he will never get the articulation that nature provides. When the dentist cuts off a crown he will rarely get as good an articulation with his artificial crown as that destroyed. With reference to breaking broaches or drills in the canals that are difficult of access, he has had little trouble since following Dr. Cushing's rule, which is simply—never try to twist a broach that binds in the canal. Clean out canal, avoid twisting or bending broach where it binds, and never use a Gates-Glidden drill and you will not be troubled with broken drills and broaches in canal. The percentage of fractured walls in these cases is too small to warrant cutting off and crowning them all.

Dr. Kennedy: Under the circumstances save the natural organs, first by filling, then crown if necessary. In case described, first put on the rubber-dam, disinfect, remove decay and fill the pulp-chamber with gutta-percha, then fill the distal cavity with amalgam. Keep the patient in the office an hour or two until the amalgam is hard, then open the tooth anterior to the filling, remove the gutta-percha from pulp-chamber, clean and fill canals. He does not understand how anyone can use a Donaldson cleanser in preparing the anterior canals, especially the broaches having a long handle. He is indebted to Dr. W. N. Morrison for the ease with which he meets these cases, since he learned from Dr. Morrison to use the Swiss jewelers' broaches. He cuts off shank of the broach and uses pliers to place in position in tooth, then rotates it between thumb and forefinger, using preferably a smooth broach with shred of cotton. If the broach should break, the cotton stays with portion left in canal, and by means of it this piece may be removed. If the broach is barbed, the barbs should be counted in order that you may know positively if any portion breaks off in the canal.

Dr. Marshall in closing the discussion explained that he did not select the first molar because he thought it more difficult than the second or third inferior molar, but because he wanted to present a typical case, and what was true of the first was also true of the second and third in an even greater degree. In reply to Dr. Conrad's remark that these roots are not reached because of lack of skill of the operator, he thinks the greatest difficulty not the treating and filling but the prognosis. The operator does not live who always reaches those anterior canals. He then related Dr. J. C. Storey's experience with capping pulps—down in Texas—and told how that worthy dentist never knew how many of those pulps died, because when they died the patient always went to the other fellow. And so with these cases, we do not know how many fail and go to the other fellow.

He does not accept the statement that a filling should be used at first, expecting to crown the tooth ultimately. As to occlusion, while we cannot always secure as perfect an occlusion with a crown as that which has existed, we can often obtain a much better one, so that this should not deter us from making a crown. In conclusion, he said that he expected opposition; all new ideas meet with opposition, and he was still of the opinion that not all molars but the majority last better and serve better crowned than filled.

The rest of the evening was devoted to a discussion of the Chicago Dental Society Clinic. Only four of the members who had attended the clinic were present at this meeting, but many of the clinics were described, and a most interesting and enthusiastic report given by each one.

Dr. Taggart's artistic porcelain work attracted more general attention perhaps than any other one clinic. But each one brought home some thought of special value to himself and all wished that the "clinic" might become an annual meeting in some central city, if it could be as well arranged and delightfully carried out as it had been in Chicago.

Of course the St. Louis dentists cannot expect to be honored in every city by having such graphic illustrations of their methods of practice published in the daily papers, but we would not look for such flattering notice except from our Chicago brothers.

News of the passage of our new dental law has just reached us. The dentists of Missouri have all pulled together and the result is a new law which places us in line with other progressive states.

Yours truly, ST. LOUIS.

A MOMENTOUS QUESTION.—A dentist in London has written the *Lancet* to ask if it would be proper for him to extract a tooth from a patient who had been anesthetized by an homeopath. The question has staggered even such expert medical casuists as the editors of the *Lancet*, and they suggest that it be referred to the British Dental Association.—*Medical Record*.

NEURALGIA.—Dr. L. Leonard Corning, of New York, recently explained in the *New York Medical Record* his new method of treatment for neuralgia. He has a combination needle and lancet fixed on a hypodermic syringe. The latter is slightly heated and filled with a mixture of paraffin and oil of theobroma, mixed in proper proportions to have a melting point of 105 deg. F., or high enough to chill and harden several degrees above the normal heat of the body. The needle is inserted, a slight injection made, and with the knife edge the affected nerve is severed; and during the withdrawal of the knife oil is forced in. Ice is immediately applied for the purpose of chilling the oil and forming a plug which will permanently prevent the junction of the severed nerve filaments. Hemorrhage ceases immediately the plug hardens. Success in several cases is reported.

The Dental Digest.
PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

CRITICISMS BY DRS. BLACK AND JOHNSON.

We publish on pages 133 and 193 criticisms of our editorial in last month's issue on Dr. Black's paper, "Recent Improvements in Filling Teeth." We wrote the editorial with a view of getting a thorough discussion of the subject, and will reply to the criticisms in our next issue. In the meantime we invite discussion of the subject. The proper care of the proximal surfaces of the teeth is about the most important question in dentistry, and therefore cannot be too carefully studied or discussed. Our pages are open to a free interchange of thought on proper contouring of interproximal spaces.

ARE WE GROWING?

Any one taking a pessimistic view of the dental profession, claiming that it is not improving, should have been at the last meeting of the Chicago Dental Society and listened to Dr. I. A. Freeman's paper on "Removal of Deposits Upon Teeth," which is published in this issue, with the discussion which followed, and then have looked up papers and discussions on the same subject fifteen years ago. No one could fail to be encouraged at the advancement shown.

The paper brought prominently forward the important fact of the treatment of pyorrhea, and the interest in the subject, as shown by the discussion, was checked only by the lateness of the hour. Every one knows that the important part of the treatment of pyorrhea is removal of the sanguinary deposit and keeping the teeth free from it. The interest shown proves that the treatment of this disease is receiving more and more consideration, and we are sure that constant and repeated discussion of the subject is bound to result in good and to aid in a better treatment of this ever-constant disease.

QUESTIONS SUBMITTED FOR DISCUSSION.

We call attention to the list of questions selected by the committee appointed by the American Dental Association. There has never been a close relationship or cooperation of the local and state societies and the association, although the latter is made up of delegates from these societies. To increase this bond of union and get active cooperation is the object of this committee. Therefore the committee have tried to select subjects which are not settled and on which much difference of opinion exists, hoping that they may be discussed by members of the various societies in the United States, so that the results of these discussions can be taken up by the proper sections of the parent society and made the basis of their reports. If the aid of the members of the different societies can be secured much good will result, and we urge an active interest from the members and hope the officers will assist in this movement.

The meeting of the American Dental Association will be held at Old Point Comfort, commencing the second Tuesday in August. Now is the time to select a subject for the paper you expect to write for your local or state meeting. Look over the list here published. You will find several subjects which should be discussed.

UNION OF AMERICAN AND SOUTHERN ASSOCIATIONS.

We publish on page 138 of this issue a paper by Dr. Fillebrown to which we would call special attention and ask that those interested give the subject careful thought, as the matter of this union will be presented at our next meeting for discussion and action. We feel safe in asserting that on the main question there is but one side. At least it seems to us that we should have one national association where everything of importance is presented for consideration each year, and where the members of the profession can meet together from all parts of the country in one meeting.

The details of reorganization we do not care to discuss here, since much of this must be taken from what experience has already proven to be essential and correct. The rules which are to be our guide can be amended from time to time if circumstances so indicate. We believe the consolidation of the two associations is desirable and will be brought about. If each one is desirous of doing what seems best for all the work will be easy. The one who has plans of his own to present which have never been tried should have them very distinct in his mind before presenting them, otherwise they can act only as a hindrance.

We are especially anxious to have an organization which is truly representative and which will be more than a mass meeting. To accomplish this means earnest work and will be a great step in the right direction, and we urge all to give the matter careful thought.

Notices.

IOWA STATE DENTAL SOCIETY.

The annual meeting of the Iowa State Dental Society will be held in Des Moines, Iowa, May 4-7, 1897. The profession in this and other states are cordially invited to attend. W. G. CLARK, Secretary, Cedar Rapids.

ILLINOIS STATE DENTAL SOCIETY.

The 33rd annual meeting of this society will be held at Peoria, May 11-14, 1897. An excellent program is in course of preparation. Members are urgently requested to be present, and the profession generally are cordially invited. A reduced rate of one and one-third fare has been granted from all points within the state.

LOUIS OTTOFY, Secretary, Masonic Temple, Chicago.

LIST OF LATEST DENTAL PATENTS.

577,507. Alfred Cane, Golden Gate, Cal. Dental Plugger.
577,638. John T. Barker, Wallingford, Conn. Furnace for Dental Use.
26,678. James W. Ivory, Philadelphia, Pa. Design for Dental Tool for Carrying Amalgam.
577,887. Jere E. Stanton, Boston, Mass. Dental Mallet.
578,729. J. Austin Dunn, Chicago, Ill. Dental Clamp.
579,094. Mont C. Merker, Philadelphia, Pa. Dental Chair.

EASTERN ILLINOIS DENTAL SOCIETY.

At the 11th annual meeting of the society, held at Mattoon, Ill., March 16 and 17, 1897, the following officers were elected for the ensuing year: President, Dr. A. S. Watts, Decatur; Vice-President, Dr. F. M. Conkey, Homer; Treasurer, Dr. S. A Campbell, Mattoon; Secretary, Dr. W. A. Hoover, Gibson City; Librarian, Dr. T. S. Childs, Decatur; Ex-Com., Dr. I. B. Johnson, Onarga; Dr. C. H. Tillotson, Mattoon; Dr. J. W. Reed, Paxton; Supervisor of Clinics, Dr. W. C. Lumpkin, Mattoon.

QUESTIONS SUBMITTED FOR DISCUSSION BY LOCAL SOCIETIES. FORMULATED BY THE COMMITTEE APPOINTED BY THE AMERICAN DENTAL ASSOCIATION.

1. Pyorrhea alveolaris; what is it and how many varieties are there? Are all local in origin or constitutional, or both? What is the treatment, local or constitutional, or both? What may be regarded as a cure? Is the disease likely to recur?

2. *a*—What is the cause of dental caries? *b*—Why is caries so much more active in some mouths that in others? *c*—What changes take place where caries ceases its activity in mouths heretofore predisposed? *d*—Are there recognizable signs by which we may know whether or not caries will cease with advancing age?

3. To what extent are we justified in giving our patients systemic treatment?

4. To what extent and when are we justified in using cataphoresis? Is there danger of injuring the dental pulp or other tissues by its use?

5. What can we do to increase the attendance at our dental societies?

6. In view of the recent investigations has amalgam been a blessing or a curse to humanity?

7. Are there any proofs that the mercury in amalgam fillings is injurious to the health of the patient?

8. What are the best materials for filling teeth and the prospective durability of fillings in different cases?

9. What are the best methods of bleaching teeth?

L. P. Bethel, }
A. W. Harlan, } Committee.
J. N. Crouse, }

HARVARD ODONTOLOGICAL SOCIETY.

At the 19th annual meeting of this society, held at Young's Hotel, Boston, February 27, 1897, the following officers were elected for the ensuing year: President, Waldo E. Boardman, D.M.D.; Rec. Secy., Joseph T. Paul, D.M.D.; Cor. Secy., Edward B. Hitchcock, M.D., D.M.D.; Treasurer, Lyman F. Bigelow, D.M.D.; Editor, Henry L. Upham, D.M.D.; Executive Committee, Joseph T. Paul, D.M.D., Chairman, Frank T. Taylor, D.M.D., and William P. Cooke, D.M.D.

E. B. Hitchcock, Secy., Newton.

News Summary.

Most People Do.—It is folly to expect the stomach to do the work of the teeth.—*Ex.*

Aromatic Sulphuric Acid.—If this be spilled upon black walnut furniture and the color be changed, it can be restored by applying chloroform to the spoiled surface.—*F. J. Fesler.*

Blood Stains.—Dr. Blenkiser in the *Scalpel* says that surgical instruments, sponges, the hands of the operator and blood-stained articles may be readily cleansed by washing them in a tepid solution of tartaric acid and rinsing in water without soap.

Mad Dog Bite.—A professor in the University of Klausenburg claims to have compounded a solution which completely neutralizes the poison introduced into the system by the bite of a mad dog. It consists of chlorin water, salt-brine, sulphuric acid, permanganate of potassium and eucalyptus oil.—*Dr. Fowling, Albia, Iowa.*

Nitrous-Oxid Gas with Oxygen in removal of adenoids has the advantages that: 1. It is not attended with danger to life. 2. No preparations are required. 3. Hemorrhage is not affected by it. 4. Jactitation and cyanosis produced by pure nitrous oxid are absent. 5. Any position may be safely assumed. 6. Anesthesia is longer than by the nitrous oxid alone. 7. Unpleasant after-effects are very rare.—*Gardner.*

Editor's Delight.—A new game called "The Editor's Delight" is played in this way: Take a sheet of ordinary writing paper, fold it carefully, and inclose a bank-note sufficiently large to pay up all arrearages and one year in advance. Keep an eye on the editor, and if a smile adorns his face the trick works like a charm. Now is the time to play the joke.—*Herald Christian Advocate.*

Erratum.—In the article by Dr. Weld, on "Disinfectants and the Chemico-Metallic Method of Treating and Filling the Difficult Root-Canals of Semi-Devitalized Teeth," in the February issue of the Digest, two decimal points are omitted in the table referring to euthymol as an antiseptic. On page 110, last series, first column, it reads 75 per cent, should read .75 per cent; next column, 5 per cent, should read 1.5 per cent.

Death During a Dental Operation.—Death during the performance of a dental operation, although not unknown, is nevertheless extremely rare. Such an event has recently occurred at Swaffham, and is recorded in the *Eastern Daily Press* (January 2). The patient was 18 and had been ailing for some time. He went to a dentist named Wallace to have a tooth stopped, and shortly after the operation was commenced he was seized with a violent fit of coughing, which led to fatal syncope. A medical man was called in and everything possible done to save the patient's life, but to no avail.—*Jour. Brit. Dent. Assn.*

To Distinguish Cocain from Eucain, and to Detect a Mixture of the Two.—The excessive solubility of hydrochlorate of cocain permits its being distinguished from hydrochlorate of eucain, for eucain is soluble one part in nine of water, while cocain is soluble in less than its own weight of water. To detect eucain that may be fraudulently added to cocain, because of its costing less, Vulpius states that by dissolving 0 gr.-10 of the suspected salt in 50 cc. of water and then adding two drops of aqua ammonia, if the cocain is free from eucain the liquid will remain clear, even though a few crystals may be deposited, whilst if eucain is present the solution becomes cloudy or milky in appearance.—*L'Odontoligique.*

Obituary.

DR. F. H. DETERDING.

Dr. F. H. Deterding, one of the best known dentists in Allegheny, died at his late home, corner Ohio and James streets, at 10 o'clock, December 9, 1896. He was taken ill about six weeks previous with pneumonia, which gradually developed into complications which caused death. Deceased was an alumnus (1881) of the Ohio Dental College, and had been practicing in Allegheny ever since his graduation. He was a prominent member of the Royal Arcanum, A. O. U. W., Jr. O. U. A. M., Past Regents' Association of Pennsylvania, and of several other dental and secret organizations. A wife, one son and a daughter survive him.

The Dental Digest.

Vol. III. CHICAGO, APRIL, 1897. No. 4.

Original Contributions.

REMINISCENCES OF PRACTICE.

BY W. D. TENISON, D.D.S., NEW YORK. READ AT REGULAR MEETING OF ALUMNI ASSOCIATION OF NEW YORK COLLEGE OF DENTISTRY, MARCH 10, 1897.

At the request of your executive committee to read a paper at this meeting, I have put down a few recollections of my past experiences and tribulations during a practice of thirty-five years, which can hardly be called a paper, but which may amuse and interest the younger graduates, showing them what we old dentists with limited means had to contend with in acquiring a knowledge to enable us to practice as compared with the present system of education. As I look back I am glad that I entered a profession I can now feel proud of, and congratulate myself that I have had the pleasure of being associated in work with some of the brightest minds who have added their share in putting our specialty of surgery and medicine where it belongs to-day.

In the early days of dentistry I understand an effort was made by some of our practitioners to get medical colleges to add a chair of operative and mechanical dentistry and allow our men to receive the degree of M.D., and, if necessary, special certificates of qualification as dental practitioners, but it was refused, and the outcome was the applications to legislatures for charters for special colleges where our specialty could be taught. In my opinion it ought never to have been so, as we are practicing, I might say, the most important specialty of surgery and medicine that is practiced by any medical men to-day.

To go back to my reminiscences. What made me think of becoming a dentist was this—I was and am related to physicians in many ways, and as my inclinations ran in the same groove, also having a taste for mechanics, I thought of dentistry as a specialty where I saw great possibilities of doing much good and being afforded a reasonable income. Being acquainted with an old dentist of good standing in New York, I went to him and made my wishes known and he promised to teach me all he could. I think the only college in existence then was the old Baltimore Dental College. As I could not afford to go there I had to content myself with what I could learn in a private way. At that time a dentist was so afraid that another dentist might find out some particular way he had of operating, or some discovery he had made, that all such were kept secret. You can judge then how much a poor young fellow could learn. The only dental literature outside of a dental journal or so was "Harris's Principles of Dental Surgery," which I read faithfully. During my stay with the dentist referred to I was allowed to be present at only one of his operations, the extraction of two upper first molars—I was called in to hold the patient's hands.

I was taught filling by putting teeth in a vise, preparing the cavities, and filling with tin-foil. As to treating diseased teeth, I was *told* how to do it. I was taught how to clean instruments, shape and temper them, after which my education as an operator was pronounced satisfactory and I was competent to practice. I thought so too, and felt very proud, but that conceit was taken out of me later.

The next branch of the profession to learn was artificial work. My preceptor sent me to his artificial worker, who was a good worker but did an advertising business, and consequently turned out a cheap and poor class of work as a rule. As rubber work at that time had not come into general use, he made cheap silver plates for about $10 to $15 each. His mode of getting them up was to cut a pattern, buy a silver plate, which then cost from 50 to 75 cents, swage it up, get plain or gum teeth as the case required, and solder them on with tin, using a roofer's soldering iron. Patients were constantly returning with one or more teeth off. When I asked why he did not solder them so as to be secure, his answer was, "All I want is that they hold on until the patients get out of the office." I said, "They will be back again in a day or so." His reply was, "That is all right; I will then charge for putting the teeth on again." I regret to say we have a class of men to-day who practice on the same principle.

After about six months of such instruction, cleaning up the laboratory, and making one of those silver plates, I was pronounced a competent mechanical dentist, and with a certificate to that effect from each of the dentists was let loose to prey on the community. As I had had no actual practice, only in a measure theory, and as there was no law or code of ethics to regulate the practice of dentistry at that time, I thought the best way to get business was to put an advertisement in some of the papers, offering to do work free for the poor during certain hours. The first victim was a young man who wished a lower bicuspid extracted. I put on the forceps with a feeling of perfect confidence and broke off the crown, then went at it again and again, each time breaking off a little more, and finished by breaking the forceps. By that time the poor fellow was on the verge of collapse, so I was obliged to take him out, give him several drinks and send him home, in a measure happy—but I was not happy, the conceit was taken out of me.

My second case was a young woman who wished an upper first molar extracted. I went at that with more care and less confidence and succeeded in getting it out all right. If any of you are fishermen you have, no doubt, some time or other hooked a fine fish, and after much care, caution and trouble landed it; so you will understand my delight when I saw that tooth in the forceps.

I could tell you dozens of experiences, but will confine myself to a very few. About that time I had occasion to go to Paris, France, expecting to return in a few weeks, but after my arrival there several offers were made by dentists to associate with them, as American dentists were much in demand and I was supposed to be a first-class one. The truth was, I never had filled a tooth in the mouth with gold, and very few with any other material.

The gentleman with whom I thought of associating said one day he would like to see me fill a tooth with gold, and would have a patient at the office the following morning. I slept very little that night, for had I failed it would have been known in a day or two by all the Americans there, especially by the few American dentists in Paris at that time, and all my prospects there would have been blighted. However, I braced myself up next morning and met the patient, a gentleman. There were two crown cavities in the two superior first molars. My prospective associate proposed I should fill one and he the other and then compare notes. I suggested, as he was the older, he should hold the post of honor and fill the first one and I would follow. I watched him very closely.

When finished, he laid down the instrument with an air of great pomposity and asked me to examine the filling and tell him what I thought of it—of course I was a good judge. I then followed, filling the other as he did (hand pressure), and, laying my instrument down with the same air of consequence, asked him to examine.

That settled it. The same day I received a proposition to associate, which I accepted. Some days afterwards I was polishing up a gold case at an open window in our laboratory, which was five stories up, and not being an expert, the wheel caught in one of the clasps and out it went. I will not tell you how I felt at what occurred, but I will tell this much, that I nearly followed the case out of the window, my prospective associate (we had not yet signed papers) being a very large and strong man and present at the time. However, we soon understood each other better and became associated, he leaving me in charge of his practice while he made a visit to Spain, having formerly been court dentist there.

As I have already said, rubber work was just coming into general use as a base, and he, being a progressive man, sent to America for a vulcanizer. At that time they were made very large, holding at least a gallon of water. To be sure it was all right before leaving for Spain, he had it filled one day and put on a stove with a good fire under it. I had never seen one used and went up to the laboratory to enjoy the fun. I got it. When the steam began to rise a leakage took place, so the cover was removed and a lot of whiting smeared over the large rubber packing, and as it still leaked after that, my partner and a Spanish man we had hired got into a very angry dispute over it. Suddenly they both left for the office to look up the printed instructions, leaving me alone with the vulcanizer. I was quite near, watching it, when suddenly there was a loud report and I was knocked or fell over in my fright, something struck the ceiling, coming down with a thud on the floor, the room was full of steam and I thought my time had come. I made my way on my hands and knees in the direction of the door, which I reached in short order. At the time of the explosion I had a new silk hat on my head. I wish you could have seen that hat and myself after the room cleared of steam! Both were white, the result of the rubber packing blowing out, which was all covered with whiting. When my partner returned he hardly recognized me or the room, we were both such wrecks. Shortly after that he left for Spain.

It was then my troubles and tribulations commenced in earnest. The first patient after he left was a lady with several teeth decayed, both upper and lower, to be filled with gold, a very wet mouth and no rubber-dam, as it had not been discovered at that time, and I, not knowing how to keep the saliva away, made things lively for us both. She did not understand English, which was fortunate for her, as I gave vent to my feelings in that language. So it went on for six months during his absence, but it was the making of me, for I got an experience I could not have acquired in years had I been building up a practice of my own, and yet I knew very little and had much to learn. I will mention two cases to show you how little I did know even some time after that.

A few years after going to Paris I met a young lady from New York who was perfect in my eyes, so much so that she became my wife. There was only one defect—her two superior centrals, which were large, had been decayed for some time, both dead, much discolored and one of them with a fistulous opening above it. She was so nervous that it was with the greatest difficulty I could get her to allow me even to examine them. After a time I got her consent to fill, provided I did not use gold. We were then using oxychlorid of zinc as a filling material, so I decided to fill with that. After cleaning out all the decay and the pulp-canals as well as I could, I mixed up the oxychlorid and forced it into the cavity. To my utter surprise and dismay I saw the gum around the fistula getting white. I knew then that there must be a passage through the tooth to the outer surface of the gum and expected very bad results; but quite to the contrary, the fistula closed up, gum became healthy looking and there never was any trouble afterward. The experience caused me to think of experimenting with oxychlorid as a root filling, and with the chlorid of zinc in the treatment of dead teeth, both of which gave most happy results; and I think I have the right to claim to be about the first, if not the first, to use these two materials in this way.

On another occasion I was cleaning out the root-canals of an upper first molar for a gentleman, when suddenly the drill went up through the tooth such a great distance that I became very much alarmed, not having any idea where it had gone. I told him the tooth was not in a condition to fill for a few days and dismissed him. I took a work on anatomy, read up on that portion of the body, and found the drill had gone into the antrum of Highmore. More alarmed than ever at my mistake, on the return of my patient I advised extraction of the tooth. So you see how many of us had to grope in the dark to find the information we required; the result of which has been the founding of colleges all over this and other countries for the proper education of dentists, so that to-day we stand as an educated body of men in our specialty; yet, although we have made such wonderful progress, we are far from perfect. So far as my observation goes, no matter how much we know or think we know there is room for much more. It was for this reason that, after fifteen years of practice, I entered the New York College of Dentistry, going through it as a regular student, and graduating in 1876. I never have had occasion to regret it.

At the time I entered the profession we had but very few conveniences such as we have now; no dental engines, no cabinets, no fine chairs, no rubber-dam, no dental materia medica—in fact, nothing as compared to the present time. We were not regarded as professional men, and even to-day the public, in general, do not know our standing as such. We therefore owe it to ourselves to instruct them whenever we can.

Discussion. Dr. Sailer: I feel very much gratified at the opportunity of hearing such a pleasant and comprehensive paper; it is instructive in more that one sense. It gives our younger members here encouragement. Now in my younger days I should have appreciated it very much if I had had a gentleman get up and talk to me, face to face, in such a commonsense and friendly manner, and tell me all of his youthful failures. It would have given me great encouragement, because I was unfortunate myself when I first started out.

Dr. Swift: One thing that struck me forcibly in Dr. Tenison's paper was the lesson it held for the younger men—and I still class myself among the younger members, although I have been practicing now nearly twelve years—the indomitable will that Dr. Tenison showed, for instance, when he put that gold filling in in Paris, never having put one in before. I feel we would all do well to have just that sort of feeling and confidence.

Dr. Hart: The thought occurred to me during the reading of the paper that we are all very fortunate to-day, in that we have definite standards to live up to in the practice of our profession. Former practitioners created certain high standards, and the profession at large tries to live up to them, and though the pendulum has swung from the early root fillers and the oxychlorid of zinc used by Dr. Tenison to the many remedies advocated nowadays, the former still hold an important place in our affections and in our practice.

Dr. Tenison: I failed to speak of one thing—the dense ignorance that sometimes marked the practice of those earlier days of dentistry. A gentleman, whose father graduated in 1835 and was a practicing dentist in Pittsfield, Mass., related to me the following incident. His father was called upon one day to fill a tooth with gold. At that time, I believe, there was a sort of amalgam used, which, melting at a very low degree of heat, was formed into the cavity to be filled. This man, supposing gold was to be treated in the same way, melted the gold and poured it into the patient's tooth, and there was a terrible time in town about it. This happened about 1835, so you see we have improved somewhat in our method of filling teeth.

Dr. Chickerio (the President): In my experience as an instructor I have found that ignorance is by no means confined to the patients, but is shared as well by those practicing dentistry. In 1887-8 one of the men who studied with me had occasion to make a rubber case. In trying to run the vulcanizer, instead of applying the heat at the base, he applied the flame to the thermometer. Needless to say, the mercury went up like a shot.

AMALGAM AND ITS USES.

By J. E. Adams, D.D.S., Paris, Ill. Read Before Eastern Illinois Dental Society, March 16, 1897.

Amalgam was first introduced into this country for filling teeth in 1833, and since that time unlimited discussion has arisen among the general practitioners of medicine, as well as dentistry, in regard to the practicability of utilizing this material in dentistry. From the very first the better class of practitioners waged war against it on general principles, not alone on account of the supposed deleterious effects of the mercury contained in its composition, but because of its unsightly appearance. In short, it has been charged and credited with defects and qualities which would indicate that it is at once the worst and best material for filling teeth in existence.

It has been and is yet comparatively easy to save well calcified teeth by filling with gold or other material, but the conditions are changing. With these poorly calcified teeth we have to look to their preservation first and artistic methods and effects afterward. Cements are good and I would recommend their use extensively in temporary fillings. Gutta-percha is good only in a few positions. Tin, while one of the best tooth preservers we have, has the same objection to it as gold in manner of manipulation and is too soft to wear well.

We have no filling that is practical in every case; it would be just as absurd to fill all teeth with one kind of filling as to treat all diseases with one remedy. The first and most important consideration in selecting material for a particular tooth would be structure of tooth; second, position of tooth and cavity. Gold of all filling materials probably heads the list, but on account of mode and force required in manipulating I consider it the proper filling to use only in strong, well calcified teeth, and in cavities easy of access.

Amalgam on the other hand is suggested to me for such cavities and teeth as gold is not adapted for—teeth of soft structure and cavities difficult of access. Amalgam is the only plastic metal filling we have; it is compatible with tooth structure, has comparatively low conducting power, and is easily introduced into cavities. None of the agents used in filling has excited so much discussion; no material is in more common use, and many cases are presented where such a filling seems the only one practicable. An amalgam that will retain its color, and not shrink when properly manipulated, is second to no material as a tooth preserver. We have all seen teeth filled with this material that have been effectively preserved from decay for fifteen to twenty-five years, and just as good as when first inserted.

The success of an amalgam filling depends largely upon the way in which it is manipulated; too much mercury is sure to destroy the setting properties, while some claim that too little favors disintegration of the filling. I feel very sure that the proper way is to work the filling dry, either by squeezing out the excess before filling or wiping out excess as the operation proceeds. Amalgam has been much abused, for, being so readily prepared and inserted, it has caused a great deal of careless operating, but gold no more carefully used would not make so good a filling. Defective manipulation is one of the most potent causes of failure, whatever material may be used.

The preparation of a cavity for an amalgam filling is distinctly different from almost any other. The walls of most cavities should be straight, the enamel walls parallel and not beveled, all angles drilled out, and the cavity enlarged within; while amalgam will permit of more soft tissue in cavity, and defects which would be of no consequence with amalgam are sure to cause failure with gold. Nevertheless, the preparation should be thorough.

No amalgam has yet been produced that will leave a smooth surface after insertion, and too much care cannot be taken in finishing, especially at the gum margin. Yet we so often find overhanging almost enough to fill the cavity proper. The best time for finishing is two or three days after the filling is put in, as then it is hard and will take on a better finish without danger of breaking or crumbling. The mercury used should be the best redistilled; the success of the filling depends largely upon this and the thorough mixing. I consider the matrix almost indispensable in all approximal cavities; it makes a difficult cavity simple and lessens the danger of overhanging walls at the gum border.

GAINING ACCESS TO AND REMOVING DEVITALIZED PULP.

By C. H. Tillotson, D.D.S., Mattoon, Ill. Read before Eastern Illinois Dental Society, March 16, 1897.

We find pulp exposures from almost every aspect of the teeth. While some localities are simple enough of access with little cutting, many are difficult and perplexing to the operator and trying to the patient. It is these many difficult and out-of-the-way exposures I desire to discuss.

Frequent places for these points of exposure to occur are at the distal cervix of the second upper and lower molars, the cavity of decay very often being induced by the third molar abutting against its neighbor in such a way as to leave or form badly shaped interdental spaces, in which food lodges, is retained, and allowed to remain and ferment. These cavities are often of small circumference, yet penetrating deep enough to enter the pulp-chamber.

After allaying the irritation and controlling the pain we devitalize the pulp. This brings us to the stage where it is necessary to gain free access to the pulp-chamber and canals. We must cut forward to a point on a line with the canals in order to be able to introduce and withdraw the broach easily. It is desirable and commendable to cut farther than this at times for the purpose of flooding the cavity with light if possible, so that we may readily and clearly see all parts of the cavity. While we advocate the conservation of tooth substance, we cannot work in the dark without necessarily guessing at what we are doing.

This brings us to the place where we have to begin cutting. I am often amazed at the varying methods offered by different dentists. I have listened to those who earnestly advocate the use of gouge chisels for cleaving the enamel, and hand-burs for removing the dentin and entering the pulp-chamber and canals, saying they have no use for the engine for this work. Others say they use the steel burs altogether with the engine for cutting both enamel and dentin. Experience, however, has taught me that nothing can give me and my patients the same satisfaction for heavy cutting as grinding away the overhanging walls with sharp, keen, grit corundum points, kept wet with water.

These I am in the habit of molding at the chair or elsewhere, as I need them, from new corundum by softening a small piece and placing it upon a mandril or worn bur or drill. Then, passing it through the flame of the spirit lamp until the shellac is partially melted, mold it deftly between the thumb and finger, and while yet soft place in handpiece and revolve under light pressure to true up.

This grinding with corundum has advantages over the steel bur, inasmuch as it does not heat or jar the tooth so much and will grind enamel faster than a bur will chip it; this once removed, the bur may be employed to cut the dentin. After grinding the walls until parallel with the base of the pulp-chamber, or farther if necessary, we enter the orifice of the canal with cone-shaped burs and follow with a drill. If the work has been thoroughly performed up to this point very little delay will be experienced in removing the debris and pulp. We very often find that pulp tissue is tender and sensitive to the touch even after making repeated applications of arsenic. This seems to be especially true in the buccal canals of the upper and the anterior canals of the lower molars, and to get them under better control we have achieved good results from introducing cocain full strength in combination with eugenol or chlorid of zinc, carrying it far into the canal on a fine barbed broach, and in tortuous canals resort to the use of sodium and potassium, which disintegrates and disorganizes the pulp tissue and tends to expel the particles from the canal, when they can be readily syringed away. In employing this or any powerful remedy the rubber-dam must always be in position and a platinum broach used to convey the sodium and potassium.

Having gone this far into the discussion of this subject I don't feel that I will have fully conveyed the intention of this paper by stopping here, and so must digress a little from the subject in speaking of the imperfect operations we all find in this class of work, generally spoken of as pulp cases. It will be understood that the purpose of removing the pulp from the teeth under discussion is to get them in condition for filling, and how often it happens that we find the root-canals very imperfectly opened and filled. I don't know how to make myself more clearly understood than by referring to a case or two out of many which have come under my observation. The most prominent in my mind just now was that of a gentleman of foreign birth who applied to be relieved from pain in his jaws, as he stated. Upon examination found a number of large amalgam fillings in the molars and bicuspids. I suggested that the trouble came from those teeth—that it was more than likely they had been filled too close to the pulp; but he informed me the pulp had been destroyed and taken out of all of them. I could see the cavities had not been cut back sufficiently to make it possible to reach the canals, and after convincing him of this he directed that I remedy the trouble. I began by removing a large amalgam filling from the distal surface of a third lower molar, and as I had anticipated, found that an *effort* had been made to clear the canals and fill them, with the result that the pulp-chamber was stuffed with cotton and the canals open save for the presence of debris. I opened the cavity thoroughly, cleansed canals, and in due time filled them and the crown. Each of the several fillings which I removed presented the same general condition. I was interested to know where and by whom the work had been done, and was informed at Copenhagen, Denmark, by an operator who styled himself an American dentist. When asked how long it took this American dentist to complete the work, four or five cavities, the reply was, only a few hours and all at one sitting, and he added they had not ceased to give trouble ever since. The cost was about $1.50 each in United States money. I told him that it would take me longer than that to prepare and fill one of them, and that each one would cost him nearly four times that amount. When I had completed his work he remarked he would hate to do that amount of work for so little money.

To sum up my argument, we are aware this kind of work is done here in the United States and the same miserable fees charged for it, and I hope to hear an expression from you how this class of work should be performed and what should be a fair remuneration for the time, care, patience and judgment necessary to perform these operations well and satisfactorily to both our patients and ourselves.

"IT IS SAID."

By G. Alden Mills, D.D.S., New York.

Dr. I. A. Freeman, on p. 145 of the March Digest, says "It is said that Riggs' disease, not yet known as pyorrhea alveolaris, was incurable, and I believe it was rarely ever treated, as with those instruments it was impossible to remove deposits situated below the gums without nearly murdering the patient."

I must say to Dr. Freeman that I have often watched the late Dr. Riggs from the start to finish in dealing with as difficult and hopeless cases as any operator attempts to-day, so that the statement should not be made that "it was rarely ever treated." Furthermore, the Riggs instruments should not be denounced as "murderous" to the patient without observation of their proper use by an expert, which would allay Dr. Freeman's fears in this respect and would change his opinion as to their not reaching the deposits in most locations, even to the apex. Constant handling of these instruments for twenty-three years, first learning their use in Dr. Riggs' office, gives me the right to make these remarks, and to add a tribute to the unusual skill which Dr. Riggs displayed and introduced.

CASE OF FRACTURE AND TREATMENT.

By M. C. Smith, D.D.S., Lynn, Mass.

October 20, 1895, was called to see E. I. Found patient with a badly swollen face, left side. Temperature 101, and a decidedly septic look. Tongue coated. Had had no sleep for several days and was suffering a good deal of pain. Found a fracture of the inferior maxillary down between the left lateral and central, through the alveolar ridge, and then backward, between the alveolar process and the body of the jaw, and up between the first and second molars, and probably a fracture through the ramus.

History of the case. Patient had been suffering for almost two weeks. Had consulted three or four doctors and been daily to his dentist, who told him he had an alveolar abcess and had been opening pus pockets along the line of the anterior fracture.

The same evening had a consultation with family physician and decided to send patient to hospital. We could not get a history of any injury at the time, but later the patient remembered of being struck twice in the face, once six months before and the second time some months later, but had forgotten all about it.

October 23 he was operated on by hospital surgeon, writer not being present. An opening was made just under the tempo. max. art. and a probe passed down along the posterior edge of the ramus and out under the external angle of the jaw. Some pus was found down deep under the masseter muscle, so a rubber drainage tube was passed through and left in place. The surgeons present had considerable amusement at the dentist's fracture, they claiming there was no fracture of the jaw. The next day, however, they were convinced that there was a fracture, as there were five teeth loose, collectively but not individually.

Pus kept discharging from the line of anterior fracture, but in a few days patient was discharged from the hospital, improved.

December 30 saw patient. Face badly swollen. Ether was given, and with the assistance of the surgeon on duty at the hospital I operated. Opened in the old incision. With finger placed in upper opening, found the ramus rough and all bare of periosteum; the coronoid process was loose from the body of the bone. Passed finger in from below until fingers met and found an old fracture across the ramus. Removed the external angle and the most of the ramus. Could feel a good deal of rough bone, but saw I would have to do too much injury to the soft parts if it were all removed. Smoothed down rough edges and packed with iodiform gauze. Expected to operate again in a few days as soon as the dead bone became loose. Put him on K. I. gr. 5 t. i. d., and tincture gentian comp. ʒi t. i. d.

January 10, 1896. Patient improving. Some pus and considerable dead bone. Inject daily about Mx of aromatic sulfuric acid in upper opening and let it run out of lower. Consider it does a great deal of good, removes the sharp edges of bone and keeps down the excessive granulations.

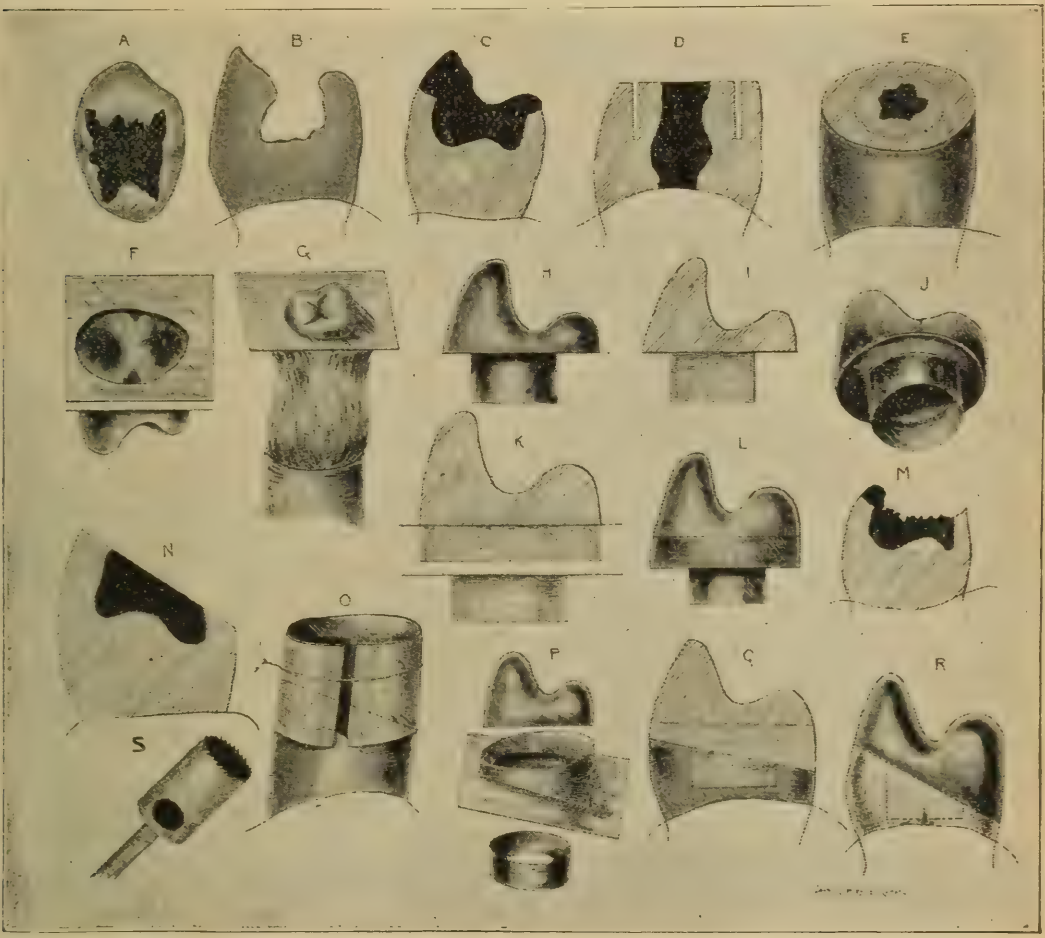
Recovery slow but uninterrupted, and no further operation necessary. All closed up, no sinus and but little deformity. In this case the surgeons or dentist did not recognize the fracture until the patient became septic, and even under ether the fracture was not recognized by the surgeons who operated the first time.

Digests.

METHOD OF MOUNTING GOLD CUSPS ON BROKEN-DOWN BICUSPIDS AND MOLARS. By B. J. Cigrand, B.S., D.D.S., Chicago. Read before Odontographic Society. Few dental operations which we are called upon to perform demand a keener judgment than cases where the occlusal surfaces of teeth are badly decayed, and present conditions somewhat unfavorable for a large gold filling, and at the same time suggest the possibility of a crown.

The method which I have the pleasure of describing this evening is one that will save tooth structure very considerably, does not interfere with the normal conditions of the interspaces, and permits of a healthy growth of the gum septum, since it does not invade this region, and in consequence affords all possible freedom to the gingiva. The process of constructing a cope by this method may at first sight appear difficult and even intricate, but I assure you upon closer acquaintance with the process it will prove to be simple indeed, and will appeal to those who intend to avoid the consequences of a barrel crown.

I will consume but little of your time in delineating the several steps in the production of the dental cope. Its application is found advantageous in the case in question, and particularly so when the dentist is tempted to position an ''all gold crown.'' It not infrequently happens that teeth decayed as is shown in Figs. *A* and *B* are presented for restoration, and the difficulty of inserting what is known as an Ottolengui gold filling would require an unusual amount of time and subject the patient to a severe task, to say nothing about exacting from them a considerable remuneration, and the latter enters into the circumstances as a potential factor in many cases. To properly reconstruct cusps on a gold filling, as in Fig. *C*, will completely tax the ingenuity and patience of any operator, while by the method proposed the work is materially simplified, without serious detraction from durability and usefulness. We begin by placing the rubber dam in place, cut out the decayed contents of the cavity, shape it for an occlusal surface amalgam filling; permit the filling to set, after which grind or trim off the entire occlusal surface to a point corresponding to the cusp margin, as in Fig. *D*. Then with the aid of the Hollingsworth cusp buttons proceed to select a cusp which will in shape and size completely restore the portion of the tooth cut down; after selecting the latter with reference to natural occlusion produce in the usual manner the swaged or solid gold complement, Fig. *F.* If you desire a good swaged cusp fashion the pure gold cusp outline and flow into it 22k gold solder; trim off the overhanging portions of the gold and solder the cusp to a small piece of plate gold, Fig. *G*; this gives you a swaged cusp thoroughly sealed at the cusp margin and will answer the same purpose as the solid gold cusp. Next use a trephine, Fig. *S*, such as is employed by Drs. Walker or Younger in the operation of implantation, and cut a circular opening into the occlusal surface of the tooth, Fig *E*; fit into this opening a complementary gold ferrule a trifle wider than the depth of the circular cavity and position it; next paint the exposed portion of this intradental ferrule with either rouge or gum arabic, and by fastening the occlusal surface of the gold cusp



on a stick of wood by means of wax it can be readily brought to its relative position on the intradental ferrule—the rouge will mark the line of contact, or if you have used the gum arabic the ferrule will come forth with the gold cusp. Now solder the ferrule to the cusp by using a small amount of 18k gold solder, Figs. *H* and *I*, and the whole is, after the usual trimming, ready to be anchored to the natural tooth with a cement which is free from grit and of a slow setting character. Permit the cement to completely set, and then with cuttlefish disks proceed to polish the gold cusp to conform accurately to the tooth. If the tooth be considerably wasted away a band may be added to the cusp button, as in Fig. K; then solder the piece of gold plate to the free border of the extending band, and to this fasten the intradental ferrule, as in Fig. *L*. This system of building up the occlusal surfaces of teeth does not confine itself to bicuspids alone but to the molars as well; but on account of the similarity of the operation it will be needless to explain the latter process. Should any pulp or apical troubles arise the case can be readily treated intradentally, since access to the pulp-chamber can be easily had, there being no obstructing post.

In bicuspids whose lingual or palatal surfaces are extensively decayed it can be built up as in Fig. *N*, after which place about the tooth a gold band held loosely in position by means of copper wire, as in Fig. *O:* then with a long hoe-shaped instrument the obliquity of the tooth is registered. Now remove the band, bring the edges in apposition and solder, trim off at the point indicated by the hoe-scratch and solder to it a piece of gold, trim off the excess metal and reposition on the tooth to cut off the occlusal edge as for a telescope crown. Remove same, attach the gold cusp and affix the intradental ferrule, and you have what is represented in Fig. *P*, and when in position as in Figs. *Q* and *R*.

This latter method can be employed in anchoring a buccal-bridge denture and avoids completely encapsuling the sound bicuspid, as is the practice generally. I have not as yet produced the cope in porcelain, but there appears to be a favorable condition in some cases which might permit of the use of porcelain; such cusps if they prove sufficiently strong would restore the tooth admirably. It would necessitate, however, that the base of the cope be made of platinum and that considerable of the occlusal surface demanded restoration, since a thin cusp or veneer would result in failure; and I quote the language of Dr. Taggart on this: "The more you engage in porcelain work the more artistic you desire to be, providing you do not sacrifice strength. To attain this end we must use a greater bulk of porcelain, and I have learned by experience that porcelain for grinding surfaces must be in bulk."

The entire cope can be constructed out of the mouth if an impression of the case is taken subsequent to trimming down the natural tooth. Pour the impressions in metal and proceed as already directed.—*Dental Review*, *March*, *1897*.

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INFLUENCE OF CONSTITUTIONAL DISTURBANCES UPON THE TEETH. At a recent meeting of the Berlin Society for Internal Medicine, Neumann discussed the influence exerted by constitutional diseases upon the state of the teeth. He pointed out that rachitic erosions occur symmetrically upon different teeth at varying levels through interference with the process of calcification. The deciduous teeth may also be eroded, but only at the same places as the permanent teeth. The erosions may in some instances begin before birth, but as a rule they take place during the first five months of life. The morbid process on which they depend terminates in 54 per cent of cases in the second half of the first year of life, in 38 per cent in the second year, and in 6 per cent at a later period. Many theories have been invoked to explain these erosions, but none is adequate. The lesions occur as the result of a morbid process continuing at least for several months and frequently longer. They bear no relation to syphilis and are dependent exclusively upon rachitis, and upon that special form involving the bones of the head. They are exceedingly common, being found on the permanent teeth in 18 per cent of children and on the teeth of 54 per cent of children dying during the second half of the first year of life. The teeth peculiar to hereditary syphilis differ from rachitic teeth in the disease not being local, but consisting in a malformation of the entire tooth. The impression that only the upper median incisors are affected is not correct. Such teeth are characterized by standing far apart, by being rotated on their axes, by standing in divergent relations with each other and by malformation of the crown. They are not common. The malformation occurs between the seventh month of fetal life and from the third to the fifth month of extra-uterine existence. It does not involve the deciduous teeth, because the rudiments of these are formed at a time when syphilis of the fetus usually results in abortion. The common form of caries begins on the incisor and gradually invades the surface of the entire tooth. It bears no relation to rachitis. It reaches its maximum of development during the second year. It is often observed in connection with chronic disease of the nervous system, especially idiocy. Circular caries is characterized by early discoloration of the teeth at the gingival margin. Caries of the neck takes place and progresses deeply until the distal extremity of the tooth is cut off, leaving an unrecognizable root. It occurs in connection with grave disease, especially tuberculosis, of which it is diagnostic.—*Berliner kl. Wochenschrift, Jan., 1897.*

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FUNCTIONS OF MUCOUS MEMBRANES. Dr. Thomas H. Manley, of New York, in an instructive article on the general and special features of the anatomy and histology of mucous membranes, thus enumerates their functions:

1. The mucous membranes and their epithelial prolongations serve as a protective mantle to the less highly vitalized elements beneath.

2. Most of them possess the dual property of taking up and discharging various substances. With their glandular equipments in the mucosa, they occupy a leading position in all the vital and chemical changes in the body; in tissue metabolism, degenerative and regenerative processes, their place is a dominant one.

3. In the healthy state of the system they provide formidable barriers against germ invasion or against the introduction into the system of putrescent noxious elements. With their serried, close columns of epithelial cells, they resist the ingress of, or, at all events, neutralize or destroy in a large measure, lethal elements in the atmosphere and in the food we consume.

4. The regenerative power of the mucous membrane and its epithelia is most extraordinary. This is commonly noted in the parts most exposed to trauma and the action of chemical irritants, as in the mouth, the respiratory passages, the stomach, the rectum, the urinary and the gall bladder. In the genital organs of a woman it is most remarkable.

5. Neither the urinary nor the gall bladder have any mucous glands. Repeated experiments have quite conclusively demonstrated that the normal urinary bladder possesses no absorbing power; none

to poisons in solution, except the corrosive irritants. It is probable that the colon absorbs very little or none of its own contents, and it still remains a much-disputed question whether or not the rectum and sigmoid flexure can absorb and assimilate non-digested proteids, or carbohydrates.

6. The mucous membranes in most situations constantly shed the wornout surface epithelium.—*Medical and Surgical Reporter.*

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SUCCESSFUL CASE OF EXTERNAL ESOPHAGOTOMY FOR IMPACTED TOOTH PLATE. By W. T. Bull, M.D., and J. B. Walker, M.D., New York. C. L——, woman, single, 40 years old, native of Scotland, in previous good health, noticed after a slight fainting attack that an upper plate carrying two false teeth had disappeared. This was in November, 1894. The plate was of platinum, one and one-fourth inches long, three-quarters of an inch broad, irregularly indented in front, and provided with two half-circles of small wire for hooking on to the sound teeth. There was trifling pain, but next day she could swallow nothing. Dr. C. F. Barker, of Newport, R. I., found it impossible to pass a bristle probang farther than six inches. The following day liquids were swallowed, and slight swelling and tenderness were detected just above the sternal notch. The facility of swallowing increased, and she could take solid food at the end of five or six weeks. The local swelling disappeared after a few days. She had no marked difficulty and no disturbance of her general health till toward April, 1896, eighteen months from the time the plate was swallowed. Then dysphagia was noticed, with loss of flesh and strength, and feebleness and hoarseness of the voice. In four months, March to July, 1896, her weight decreased from 120 to 90 pounds, and she took only liquid food. About the middle of July I saw the patient. She was thin, anemic, weak; able to go about, but not to work. Pulse 80; temperature 98.5° F. Palpation revealed nothing, and no sort of esophageal bougie could be passed beyond a point about seven inches from the teeth. No laryngoscopic examination was made. Rectal feeding was added to the nourishment by mouth for five days previous to operation. External esophagotomy was done July 27, 1896 (twenty-two months after the accident) with the help of Dr. Barker and the staff of the Newport Hospital. The esophagus was exposed readily on the left side through tissues that showed no trace of inflammation, but the body could not be felt by the finger. The esophagus was opened just above the sternum upon a bougie, and the edges of the incision were held apart by loops of silk. The wall was healthy here. An inch lower, behind the first part of the sternum, all exploring instruments were at first arrested, apparently by soft tissues. Eventually a whalebone passed through to the stomach along the anterior wall, and a probe beside it entered a pouch in the posterior wall and grated against the plate. The esophageal wound was enlarged downward till its entire length was about one and one-half inches, and the plate grasped with a curved artery clamp; but it could not be easily extracted until the mucous membrane in front of it had been cut with scissors. These manipulations were somewhat prolonged and difficult from the interposition of the sternum. It was evident that the plate had sunk into the posterior wall and been lodged, with its long diameter vertical, in a sort of pouch of the mucous membrane, which had ulcerated at one point, leaving only the upper and lower end of the plate exposed in the lumen. The wound was lightly stuffed with iodoform gauze about a large soft-rubber catheter, which reached four inches below the site of the foreign body and was brought through the dressing of sterilized gauze. The operation lasted two hours.

No vomiting followed. The temperature was 101° F., with pulse 110 for a few hours next day; then ranged from 98.5° to 99° F., with pulse of 80. For twenty-four hours only rectal feeding was resorted to; then three or four times in twenty-four hours fluids, beginning with four ounces of boiled water, were introduced through the catheter without any stomach irritation. The mouth was frequently irrigated, but nothing swallowed. Occasional cough and expectoration of mucus were quieted with small doses of morphine hypodermically. The iodoform packing about the catheter was changed three times in the first ten days, when the catheter was withdrawn and replaced by a clean one. On the thirteenth day the wound was much contracted and granulating well, and the catheter was withdrawn, leaving only a light wick of gauze down to the esophagus. Up to this time there had been no escape of esophageal or stomach secretions in the wound. In forty-eight hours after removing the catheter nourishment was administered through the stomach tube, passed twice a day; then swallowing was permitted and rectal feeding discontinued. The esophageal wound had apparently closed, for none of the swallowed fluids escaped. The sinus was healed entirely at the end of seven weeks, the patient having been out of bed at the end of a week. From the end of the fourth week a No. 19 (English) esophageal bougie was passed, and this or a No. 20 introduced on alternate days during the next month. There was a rapid gain in flesh. The voice remained rather feeble and hoarse and laryngoscopic examination made by Dr. Powell showed the left vocal cord to be motionless. For this the faradic current was given for several weeks, with gradual restoration of the voice to its natural strength and clearness, according to the patient's statement and that of her friends; but no subsequent examination of the throat was made. Four months after the operation her condition was perfectly satisfactory.—*Medical Record, March, 1897.*

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ORAL SURGERY. By Edmund W. Roughton, B. S., M. D. (Lond.), F.R.C.S. Eng. Deformities of the Mouth. As the mode of origin of harelip, cleft palate and macrostoma is unintelligible without some knowledge of the method of development of the parts concerned, it will be well to recall to mind the chief features in the process.

The prominent part of the nose and the front part of the nasal septum are developed from the fronto-nasal process, descending from the base of the skull between the rudimentary eyes. This bifurcates below into two mesial nasal processes. They coalesce in the middle line to form the intermaxillary bone with the incisor teeth, the central part of the upper lip and the columna nasi. Outside them on each side is a depression which forms the nasal orifices, and outside these again are the lateral nasal processes which form the alæ nasi. The remainder of the face above the mouth is formed by the superior maxillary plates, which grow forward and inward to coalesce with the nasal processes. The lower jaw and the soft parts covering it are formed in like manner by two inferior maxillary plates advancing from each side and coalescing in the middle line. The superior and inferior maxillary processes of each side coalesce to a great extent but not completely, the gap left forming the mouth.

The mode of origin of the various deformities under consideration will now be readily understood. If one superior maxillary process fails to unite with the fronto-nasal process, a fissure will be left through the upper lip to one side of the middle line, forming a single harelip. If both superior maxillary plates fail to unite with the fronto-nasal process a double harelip results, the intermaxillary bone being often left adherent to the tip of the nose and the nasal septum. A large median harelip is the result of arrest of development of the fronto-nasal process. A small and incomplete median cleft may result from the failure of the two median nasal process to unite. When the palatal processes of the superior maxillary plates fail to unite the result is a cleft palate. This condition may exist alone or in combination with any varieties of harelip.

Macrostoma, or congenital transverse fissure of the face, is due to arrested coalescence of the superior and inferior maxillary plates.

Harelip. The different varieties of harelip have already been sufficiently indicated in a preceding paragraph. The fissure may be little more than a mere notch in the edge of the lip. More often, however, it extends more deeply into the substance of the lip, or even completely into the nostril. The deformity is much more often single than double, and occurs on the left side more often than the right. The two margins of the cleft are unequal in length; the mesial is often rounded, the outer somewhat flattened. In double harelip the central portion is often shorter than the lateral portions of the lip and projects further forward; incisors much in advance of the other teeth, due to elongation of the intermaxillary process.

Treatment. The deformity must be remedied by a plastic operation. The best age for operation is between three and five months. Very young children stand hemorrhage badly. Dentition begins soon after five months and may seriously interfere with the success of the operation. It is important that the child should be in as good a state of health as possible. The surgeon aims at obtaining primary union, thereby closing up the gap with the smallest amount of scarring. The necessary incisions should be made with a very sharp knife to avoid bruising the tissues; the edges of the cleft should be pared sufficiently to leave broad raw surfaces, which should be concave toward the middle line of the cleft so as to lengthen the line of union; the lip should be freed from the gum at the apex of the cleft so as to avoid tension; and great care should be taken to insure accurate adaptation of the raw surfaces, especially at the free margin of the lip. The details of the operation vary considerably, according as the cleft is single or double, or complicated by protrusion of the intermaxillary process.

Operation for Single Harelip. The lip having been compressed on either side of the cleft by a suitable clamp to control hemorrhage, the surgeon first frees the lip from the gum at the angle of the cleft; he then pares the edges with a sharp fine scalpel, taking care to remove the whole of the rounded portion of the prolabium on each side of the base of the cleft. The raw surfaces are then brought into accurate apposition by means of two harelip pins. The lower pin should be passed first, and should be made to transfix the coronary artery, care being taken that the pin does not penetrate the mucous membrane, and double in a fold of it between the pared edges; being satisfied that the first pin brings the margin of the prolabium accurately into line, the upper one is passed in the same way and a silk suture twisted round each. The ends of the pins are then cut off with pliers, and a small pad of gauze placed under each to prevent injury to the cheek; several horse-hair sutures are then inserted to complete the apposition. The parts are then dried and covered with collodion, and a piece of strapping applied from cheek to cheek to support the lip and prevent traction when the child cries. In cases in which the cleft is not very wide or deep, silk-worm gut sutures may be used instead of harelip pins; when the latter are used they should be removed after twenty-four to thirty-six hours; if left longer they will produce scars. The twisted silk suture is not disturbed by removing the pins, and should be left adhering to the lip until firm union has taken place. When the fissure does not extend through the whole lip Nelaton's operation may be performed. This consists in making an inverted V-shaped incision with its angle just above the apex of the cleft, each arm stopping short of the prolabium. The tissues below the incision are then drawn down, leaving a diamond-shaped wound; on bringing the raw surfaces together by passing a suture or harelip pin horizontally, a projection on the border of the lip will be produced in place of the original cleft; this disappears in time, leaving the margin straight.

Operation for Double Harelip. This is conducted on the same principle as that for single harelip. When the premaxillary process projects, it should not be removed unless it is very small and too much out of place to be made use of; it is better, if possible, to force it back into place by partially dividing its base of attachment, or by removing a wedge-shaped piece from the septum of the nose. The central piece of lip should be completely pared; two flaps are then cut from the lateral portions, and brought down and united to each other below the central part; the latter is sutured to the two united lateral pieces.

Cleft Palate. This results from failure of the palatal processes of the superior maxillary plates to unite with each other in the middle line and with the premaxillary bone in front. The cleft may be complete, extending through the middle of the uvula, soft palate and hard palate, and through the alveolar process at the line of suture on one or both sides of the premaxillary bone, or it may involve the uvula alone, or the whole length of the soft palate, or a portion of the hard palate as well. The lower border of the vomer may be free in the cleft or attached to either margin. The malformation interferes very much with the functions of the mouth. On swallowing fluids regurgitation takes place through the nose. Infants with cleft palate are unable to suck, and consequently die unless carefully fed by hand. Speech is nasal and indistinct, and taste and smell may also be impaired.

Treatment. The infant must be fed by means of a feeding-bottle with a nipple large enough to act as a plug to the cleft, or by a spoon passed well to the back of the mouth. The mother's milk should be used if possible. The operation should be performed before the child begins to speak, but not in early infancy, as the cleft often diminishes in width during the first two or three years of life. Moreover, infants bear hemorrhage badly, and are very apt to catch cold and to disturb the parts by coughing and sneezing. Three years is the most suitable age for the operation. The cleft in the hard and soft palate should be dealt with at the same time.

Staphylorrhaphy, or closure of the soft palate. Chloroform having been administered, the mouth is widely opened and the tongue depressed by a Smith's gag. The edges of the cleft are then pared from below upward. The two halves of the uvula and the lower part of the soft palate are united by horse-hair sutures and the upper part by silver wire. The latter is passed by means of Smith's needle, which has a small reel attached behind the handle to hold the wire, and a serrated wheel half-way up the handle to protrude the wire from its tubular point. The parts having been brought into accurate apposition, the tension is relieved by making incisions through each side of the soft palate parallel to the cleft and just internal to the hamular process. These incisions secure rest for the opposed surfaces by dividing the palatal muscles.

Uranoplasty, or closure of the hard palate. The edges of the cleft having been pared, an incision about half an inch long should be made through the muco-periosteum of the palate on each side of and parallel to the cleft, taking care to avoid the palatine artery. A raspatory is inserted into one of these incisions and the muco-periosteum separated from the bone along the whole length of the cleft. The muco-periosteum is then detached from the posterior margin of the hard palate with curved scissors, one blade being passed through the cleft and the other behind the soft palate while the latter is drawn forward. The same process is then repeated on the opposite side. Silver-wire sutures are then introduced and the raw edges of the cleft brought into apposition. Tension is relieved by prolonging the cuts forward or backward as may be necessary. Hemorrhage is arrested during the operation by sponge-pressure, care being taken to let the blood flow out of the mouth from time to time by turning the head over to one side, and to see that none of it enters and occludes the larynx. In the after-treatment every care must be taken to keep the palate at rest. The patient should be fed for the first few days on iced milk, and on soft food for another fortnight. He should swallow with as little effort as possible, and speaking should be strictly forbidden until union is complete. The stitches may be left in for three weeks or a month, but should be removed sooner if they produce irritation. The surgeon hopes that the whole cleft will unite by first intention, but not infrequently a portion of it may fail to unite at once, but may to a large extent close by granulation. When a small circular aperture remains it may often be healed by stimulating its margin with nitrate of silver or the actual cautery. If a large gap remains a second operation must be performed.

Speech is sometimes perfectly restored, but the voice usually remains more or less nasal. This is due to two causes—first to faulty habit of articulation, and second to the fact that the repaired soft palate is too short in its antero-posterior measurement to completely shut off the naso-pharynx. The first cause may be to a large extent corrected by careful instruction in elocution, but the second is of necessity irremediable.

Macrostoma. Macrostoma, or congenital transverse fissure of the face, results from arrested coalescence of the superior and inferior maxillary processes. The cleft extends from the angle of the mouth to the anterior border of the masseter, or even up to the external auditory meatus. In such cases the external ear on the affected side is malformed, the tragus being detached from the auricle, forming a small lobulated excrescence on the cheek; the helix is often twisted and curled inward. This deformity is treated on the same general principles as harelip, the edges being pared and united by harelip pins and twisted sutures.

Atresia Oris. This condition may result from excessive coalescence of the superior and inferior maxillary processes, or may be the result of sloughing of the lips. Treatment consists in performing a plastic operation.—*British Journal of Dental Science, Feb., 1897.*

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MISFITTING VULCANITE PLATES. By Stewart J. Spencer, D.D.S., Harriman, Tenn. I have sometimes remedied misfits in vulcanite plates by the simple process of warming them until somewhat softened, and then allowing them to cool slowly. This warming may be done over the flame, but better, I think, in hot water. Surrounded by water, the heat is perhaps more equally distributed through the plate than when it is held over the flame. The theory is, that heat permits the plate to return to its normal shape, the shape given it by the model, if it has lost it.

It was celluloid which gave me this idea. Like many others, I was a victim of the celluloid epidemic of the eighties. One day, on boiling a celluloid plate to remove the teeth from it, I observed that it relapsed into nearly the original shape, that in which it was furnished at the depot, the "blank." I then tried molding celluloid plates at a higher heat, about 300°, if I remember rightly, and found that these plates would not, when afterwards softened in hot water, return to their "blank" shape, but (if purposely bent for the sake of experiment) would return nearly to the form given them by the plaster cast. This suggested warming misfitting vulcanite plates to restore them to shape, if warped.

The process, however, fails in those dentures which have a new layer of vulcanite over an older one, as when an old plate has been refitted. I presume that the failure is due to the fact that, when subjected to this process, the older vulcanite draws in the direction given it by the original investment, and the newer in the direction given it by the later investment, and that these two are opposed to each other. Indeed, I am disposed to believe that this opposition acts on these plates when cooling in the vulcanizer, producing misfits. Perhaps this could be prevented by sawing out the entire palatal portion of the older vulcanite.—*Items of Interest, Feb., 1897.*

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SYPHILITIC AND TUBERCULOUS INFECTION OF THE MOUTH. By Dr. J. W. Russell, Brooklyn, N. Y. Read at 2nd District Society, Oct., 1896. In syphilitic infection of the mouth there are two dangers: first, the transmission of syphilis from one patient to another; second, the infection of the dentist through some cut or abrasion on his fingers.

A short time ago there were reported a number of cases where the primary sore, or chancre, was found in the mouth, tonsils and throat. We all know how this is caused in a certain class, but where the patient is known to be of a high moral character, and in the cases of women whose purity is undoubted, the theory of sexual infection must be excluded.

The saliva of a syphilitic is rarely dangerous until the appearance of secondary symptoms, say from two to three months after inoculation. One of the most important of secondary symptoms is the mucous patch in the mouth and throat, yet I have seen a number of cases of true syphilis where the mouth appeared perfectly healthy. Herein lies the danger: it is so easy to use the mouth-mirror, which of course has been wiped off after a fashion, to examine the next mouth. If there should happen to be an abrasion, how easy it would be to inoculate the patient. Even an abrasion is not necessary, because the crypts of the tonsils are peculiarly susceptible to the syphilitic germ, and any floating in the saliva would lodge there. It would be almost impossible to give facts to support these assertions, because no one could tell exactly at what time he was inoculated. Nevertheless, the fact remains that the shiftless cleansing of mouth-mirrors and instruments exposes patients to great danger.

The question, how long is the saliva of a syphilitic capable of communicating the disease to another, is extremely difficult to answer, but I believe that it is wise to exercise great care until the tertiary symptoms are on the wane. This varies from one to three years after the primary lesion.

How are we to know that a patient has syphilis, if there are no lesions in the mouth? If the patient or the family physician does not tell, there is no way of knowing, hence the greater necessity for the absolute sterilization of every instrument that goes into the mouth. The number of offices where the mouth-mirror is not sterilized before passing from one mouth to another is beyond enumeration.

The danger to the dentist is not imaginary, for if he has any cut or abrasion on his fingers, and they are moistened by the patient's saliva, he stands a good chance a few weeks later of developing a chancre. The number of physicians and nurses who have acquired syphilis from inoculation, through the medium of patients' secretions, is not small, and there is no reason why dentists should be exempt.

That tuberculosis is an infectious disease has been demonstrated beyond all doubt. It has been proven that a comparatively healthy person may become inoculated with this disease, through the mouth or nasal passages, and in some cases die in a few months. How far is the dentist responsible? We all have tuberculous patients, and there is great danger that we may assist transmission. Their saliva swarms with the tubercle bacilli, and these, when removed to a new field, multiply with rapidity.—*Items of Interest, Jan., 1897.*

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INTERNAL CARIES. By J. H. Bland, D.D.S., Pueblo, Colo. About six months ago a lady called upon me, suffering intense pain, which she located in the region of the left superior cuspid. I made a thorough examination, but could find no cavity in the cuspid, and as all of her other teeth appeared to be perfectly sound, I diagnosticated the pain as of neuralgic origin and advised a consultation with her physician. He failed to give her any relief, and she returned to me for another examination, which, however, was made without throwing any light upon the mystery. Two months later she again returned, having suffered continuously in the interval, but having at last discovered a rough place upon the suspected cuspid. Upon examination I then detected the most minute cavity at the extreme point of the cutting edge, and upon enlarging was amazed to find the dentin so soft that it could be removed readily with a spoon excavator. I further enlarged the opening, and eventually removed all of the dentin to a line well below the gum margin. A curious factor in the case, which accounts for the continuous pain, was that the pulp had receded as rapidly as the caries had progressed, and was still alive when all decay had been removed. Will someone endeavor to explain this most remarkable case?

[Years ago a similar instance occurred in my own practice. I was using a fine explorer in examining a set of teeth, when the point passed into a minute cavity, in the sulcus of a first superior bicuspid, and to my astonishment, when I endeavored to withdraw the explorer the entire natural crown came away. Upon examining I found that the dentin had been entirely destroyed, and was readily scooped out, leaving the enamel in the form of a hollow cup, with no trace of dentin adherent. In this instance the pulp had died. This case has always been a mystery to me, but is now readily explainable in the light of Dr. Williams's recent discoveries. It is to be observed that in both cases, when the cavity finally showed, it was upon the masticating surface. Dr. Williams has found many instances of imperfections in enamel, unapparent to the human eye, but quite large enough to permit the passage of the corrosive acids excreted by the microorganisms which lie upon the surface of the tooth. These microscopic fissures in enamel usually reach the masticating surface. Again, there are not infrequently imperfections within the apparently solid portion of the tooth structure, and one slide shown by Dr. Williams disclosed such an internal space, in process of decay, and filled with microorganisms, yet connected with the surface by a microscopic passage, by which the microorganisms undoubtedly entered.—Editor].—*Items of Interest, Feb., 1897.*

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APPLICATION OF THE X-RAY IN DENTAL SURGERY. By P. M. Jones, M.D., San Francisco. Before the Stomatological Club, Nov. 3, 1896. Naturally you, gentlemen, are particularly interested in the application of X-rays to dental surgery, and in knowing to what extent they will aid you, and I will therefore confine my remarks to that particular phase of the subject. Sciagraphs can be made showing the shadows of both upper and lower jaws, and either side of the jaws, with the teeth in proper relation with their bony sockets. The roots of the teeth, being of denser material than the bone invaginating them, show clearly throughout their whole extent. As with bone in other parts, diseased conditions so change its absorption of X-rays that the diseased area exhibits a shadow differing from that cast by normal bone, and consequently necrosis, tuberculosis, or exostosis of the jaws may be very readily diagnosed. The presence or absence of a small particle of root remaining after extraction, or the location of the end of a broken drill may be quickly ascertained from a sciagraph of the suspected portion of the jaw. It has been claimed by some Eastern investigators that health or disease of the pulp may be shown by the X-ray shadows, but of this I have no personal knowledge.

As an illustration of the usefulness of the X-ray examination, I recall a case I saw in consultation about two years ago. The patient, a boy of 15, had had a lower molar extracted in Australia some two or three years before. Since that time there had been recurrences of swelling and an inflammatory process of the gum at the site of the extracted tooth. Several skillful dentists had examined, cut and probed, looking to find a piece of the root of the extracted tooth, but always without success. At least a dozen examinations of that sort had been made under cocain. Chloroform was given, a free incision made, the bone opened and two pieces of root removed, and the trouble entirely disappeared. In such cases as that the presence of the root fragments could be ascertained in a moment by means of the X-ray, and the numerous painful inflammations and examinations spared the patient.

For differential diagnosis of troubles involving the nerves or other soft parts the X-rays are practically useless, but with bone or hard structure the diagnosis is removed beyond the question of opinion and is a presentation of actual facts.

In the matter of the physical aspect of the rays, little more is definitely known now than was announced by Prof. Roentgen. There are three theories advanced to explain the nature of the rays: (1) that they are longitudinal ether waves; (2) that they are ultra-violet rays; (3) that they are streams of projected material particles. Most physicists hold to either one of the first two, the majority rather inclining toward belief in the theory of longitudinal ether waves.—*Pacific Stomatological Gazette, March, 1897.*

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ACTION OF ARSENIOUS ACID UPON THE TOOTH-PULP. By H. Prinz, D.D.S., St. Louis, Mo. There is probably no remedial agent in the whole dental materia medica which is so universally used in the process of devitalization of the tooth-pulp as arsenious acid. Dr. Spooner, of the *Dominion Kingdom*, in 1836 called first attention to this particular effect and published a formula which has stood the test of more than half a century and is used to-day, either as the original compound or in various modifications. Occasionally corrections have been suggested so as to render the application of the remedy to some extent painless, morphia-salts being preferred by many. The narcotic value of the drug in such compounds is rather doubtful; cocain as a local anesthetic has a decided advantage over the opium alkaloid. Wood charcoal, as a diluent, and cobalt (cobalt arsenatis), as a substitute, have been highly praised at different periods by their advocates. The fact remains nevertheless unaltered, the arsenious acid is the only potent factor.

The mode and form of application varies with different practitioners. A paste made of the acid by aid of some liquefying agent, such as cresote, phenol or etherial oils, is almost universally used now. The action of the acid upon the pulp is two-fold: first, as a caustic, and second, as an anesthetic. But how this effect is produced has been rather questionable, and is still the cause of frequent discussions, and only shows the vital importance of the subject. Arkoevy makes the statement that, "After the application of the arsenious acid upon the pulp the blood-vessels dilate, the contents therein disintegrate, the connective tissue-fibers become extended, and the myelin of the nerve-fiber breaks up in nodules, while the axis-cylinders disappear entirely. The structure of the dentin remains unaltered." Baume and Schlenker do not confirm the last assertion.

Another hypothesis brought forward demonstrates the formation of a hyperemia produced by the arsenious acid, with resulting strangulation of the nerve-fibers near the apical foramen. This is not correct. We may, with the same effect, cauterize the pulps in young molars where the roots are not nearly fully developed. It should not be practiced, however. The arsenic may, by passing through the foramen, involve the periosteum and surrounding tissues, resulting in necrosis of the affected portion.

To ascertain the pharmaco-dynamic effect of arsenious acid some fundamental facts have been brought forward by the investigation of Bing and Schuly. They claim that the protoplasm in some forms of dead and living tissues has the power to interchange constantly the atoms of oxygen which adhere to the arsenic, viz., to convert the arsenious acid (As_2O_3) in arsenic acid (As_2O_4) and vice versa. This permanent interchange of both the acids, this perpetual oxidation and reduction within the molecules of albumen, causes a violent to-and-fro vibration of the atoms of oxygen, and is the cause of the poisonous and the therapeutical effect. The metalloid arsenic acts merely as the carrying factor of the active molecules of oxygen, which resembles somewhat the caustic properties of nitrogen dioxid (N_2O_2) and nitrogen terroxid (N_2O_3), the nitrogen itself being here the transporting medium.

Fibehue regards the members of the arsenic-phosphorus-antimony group as not remedial agents proper. Only such tissue as is directly diseased, or such as carries the pathological germ within will die, viz., by the action of arsenic. On the healthy mucous membrane (in animal experiments) arsenic has no effect—in the animal, however, poisoned with arsenic, where the cells have therefore lost their resistance, the arsenic will cauterize the mucous lining.

From experiments carried on in the laboratories of the dental college in Vienna (Prof. Scheff) we learn that if the arsenical paste is brought in direct contact with the spread out mesentery of a frog a momentary stasis of the circulation will result. Microscopical pictures showed most of the capillaries overfilled with clotted blood; few were found empty. The nodules in the vessel wall seemed to be somewhat extended. Healthy pulps of freshly-extracted teeth were subjected to the same treatment. After preparing them for histological researches they showed, in most cases, a closer coherence of the nodules in the capillaries and the vessels themselves were seemingly thinner and presented a wave-like appearance.

Diseased pulps were also subjected to the influence of the arsenical paste for twenty-four hours continuously. In longitudinal sections the specimens represented a picture somewhat different from the normal pulps. The capillaries were almost constantly filled with blood. The corpuscles, being brought in dense contact, looked similar to fibrin-coagulum. In some of the peripheral vessels the clot represented a conglomerate of disintegrated blood-disks and fibrin masses. The excessive accumulation had extended the lumen of the vessels abnormally. In a pathological pulp there is always inflammation and as an accompanying phenomenon hyperemia is present. From the foregoing experiments the conclusions may be drawn—*that the complete stasis of the circulation is the immediate result of the action of the arsenical paste. In consequence of the stasis in the capillaries of the pulps the nerve-endings and probably the nerve-branches lose their specific physiological action, and in this way produce the analgesic effect.*

Heronan, in his text-book on physiology, explains this in the following manner: In a totally different relation to the circulation as the nerve itself remain the central organs of the nerves and the peripheral end-organs; stasis, viz., the prolonged interruption of arterial circulation, produces a much quicker disturbance of functions than in the muscles.

After the application of the arsenical paste the whole pulp will probably not break down; the newly-formed scab does not permit of deeper penetration of the caustic. Intoxication, perhaps, is excluded. The rapidly-formed scab prevents further involving of the whole pulp, and this accounts for the still painful sensation which our patients experience at the extirpation of the minute stumps from the root-canals. The quantity of arsenious acid applied to a tooth-pulp varies to some extent; we may say one-twentieth of a grain is the maximum amount in each individual case. More than two teeth should not be submitted to treatment at one sitting, so as to prevent any possibility of accidentally swallowing a large amount of the drug. Resulting failures are due to faulty application or perhaps to idiosyncracy.—*Dental Register, March, 1897.*

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CONTINUOUS GUM. By L. P. Haskell, Chicago. Continuous gum is, par excellence, the denture of to-day. The strongest, most durable, most natural in appearance, most healthy to the oral tissues, and most cleanly of all full dentures. The matter of weight I do not consider a factor in making an upper denture. If the case be properly made and adjusted in the mouth, the patient does not realize whether it weighs a pennyweight or an ounce. This I can affirm after forty-three years use of the continuous-gum denture.

The impression should always be taken in plaster. No vacuum chambers nor suction devices of any sort are needed. Cases may be made for the flattest ridgeless jaws and the highest vaults. The only change in the model, as a rule, is a "relief" over the hard palate of a thin film of wax, extending well onto the anterior ridge and nearly to the posterior margin of the plate, so as to prevent rocking of the plate.

In this work, as in all others, the plate should be worn as high as possible, over the cuspids higher than elsewhere. The margin should always be wired with a flat wire soldered edgewise to the plate, beginning at the right side and soldering an inch at a time, making a *close* joint. This is easily done, using common iron wire for clamps, clamping at two points at first. The posterior margin of the plate should be reinforced with a doubler, one-quarter inch wide, gauge 30, extending around the tuberosities. The inner margin of the doubler should be turned up a very little, to protect the margin of the porcelain. This turned-up edge should extend only to the top of the ridge, where it is met by the wire of the outer rim. The doubler should be soldered first. The wire should not run across the heel, as it is unsightly and unnecessary. A mere trifle of borax is needed simply to guide the flow of the solder. The solder should always be twenty-four-carat gold.

In arranging the teeth the roots can be cut off when necessary with side-cutting pliers. Little grinding is needed, just sufficient to let the tooth rest on the plate.

Invest in plaster and asbestos, equal parts, first applying a thin coat of plaster to the teeth, filling the interstices. After removing the wax make patterns of lead (Japan tea lead is the best) in three sections, one covering the anterior teeth and the others the posterior, but lapping over the cuspids, so when soldered it is a continuous backing, firmly anchoring the teeth to the plate. There should be a foot-piece to the backings about one-eighth inch wide, lying flat on the plate. The backings may be the same thickness as the plate. By slitting the foot-piece several times it can be more easily adjusted. For pressing the backing into place I use a worn-out rubber scraper. Use very thin twenty-four-carat gold for solder, cut in pieces three-sixteenths inch square, picking it up with a sharp-pointed instrument. No borax is needed, as the gold is laid under the foot-piece and under the pins, which are bent down close to the backing.

When using a coke or oil furnace I soldered in the furnace. Since using the electric furnace I heat the case as hot as possible over a gas heater, then solder with compressed air or an automatic blow-pipe. When cold, remove the investment after soaking; wash thoroughly; no soap or alcohol is needed.

I use the Close materials for body and enamel exclusively, as they are thoroughly reliable. The first application should be made very wet, so as to be easily worked into all the interstices around and under the teeth back of the backings, jarring with the spatula, and absorbing with a cloth all excess of moisture. Absorb with the cloth most of the moisture from the material in the dish and apply with the spatula (which is straight and pointed at one end, curved and pointed at the other, and the only steel instrument needed), holding the case upside down. The material should be packed hard, building up to the full contour, always fullest over the cuspids; jar with the spatula to bring excess of moisture to the surface, and absorb; then dry partially over the Bunsen burner or spirit-lamp. For trimming and contouring nothing equals a quill toothpick, thin and flexible, which trims around the necks of the teeth and removes all material from between. With a stiff, dry brush remove all chips, and with a small, soft camel's-hair pencil, wetting for each tooth, deftly draw it around the neck of each tooth.

With the curved end of the spatula apply the material to the palatal surface, packing thoroughly around the necks of the teeth, and a very thin coating over the surface, jarring, absorbing, drying, and trimming. Here taste can be exercised in making the lingual necks of the bicuspids and molars longer than the teeth represented, and also convexing the surfaces of the bicuspids to correspond with nature. This first application of the material should be as complete as if it were the last, as the material shrinks and the shrinkage should be complete at this baking.

The introduction of the Custer electric oven has simplified this work very much. The case is placed in the furnace without drying and the heat turned on slowly. This should not be a full bake (glossy), but only a strong glaze. The case should always be placed on the plaster cast after soldering and also after the first bake, to see if it has sprung ; if so, press it back into place. There is no liability of springing in the last bake. When cool, wet the case thoroughly and apply material very wet, jarring thoroughly to fill the crevices ; then with denser material replace the shrinkage, form the rugæ, finish as at first, and bake this time to a gloss.

Upon cooling, apply the gum enamel, of a consistency to be applied with the spatula, about one thirty-second inch in thickness and uniform ; jar slightly and absorb ; dry partially and trim with the wet brush around the necks of the teeth. The palatal surface needs a thinner coat than the labial. Bake to a *gloss*. The case can always be placed in a cold muffle to cool. Finish with files, fine sandpaper, small felt wheels with pumice and oil, and finally soft brush and whiting or rouge.

A lower plate should be doubled around the margin one-eighth inch wide and no wiring, allowing the porcelain to come flush with the edge. The reason for this is the liability of needed relief at the margins sooner or later; the case would not *appear* marred, as it would if ground or filed through a wire.

Many have given up the use of continuous-gum work on account of the difficulty they had in repairing. If properly proceeded with this is a simple matter. The case must first be imbedded in plaster and asbestos one-half inch deep, heated very slowly to a red heat. When cool, and the investment removed, there is no danger of cracking. Then grind out the remains of tooth to be replaced and a portion of the gum. Select a tooth or teeth (rubber teeth are suitable for repair). No soldering is needed. If only one tooth, pack some material (lower fusing than the original) around it and carefully place in the furnace; bring up the heat gradually to a good glaze. After cooling apply the enamel. If several teeth are replaced, hold them in place with a light coat of plaster and asbestos over the ends or half way down and extending onto the adjoining teeth. If only the corner of a tooth is broken off, repair with the easily fusing material. If there are cracks in the enamel, grind into them and fill with body.—*Dental Cosmos*, *Feb.*, *1897*.

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CATAPHORESIS AND ELECTROLYSIS IN THE TREATMENT OF PERIDENTAL INFLAMMATION. By John M. Fogg, D.D.S., Philadelphia. Notwithstanding the fact that the original experiments in cataphoresis had for their object other lines of local medication, all, or nearly all of the recent investigations and developments of cataphoric medication have been in the line of anesthetizing sensitive dentin and of bleaching teeth. As a consequence of this tendency, a very important application of the principles of cataphoresis and electrolysis has received too little attention. I refer to the inflammations in the peridental region arising from various causes, and the gratifying results to be met with in their treatment with the help of the electric current. The most frequent of these conditions is probably that of chronic pericementitis, the cause of which is so often found in the imperfect sterilization of root-canals at the time of filling. By the introduction of antiseptic agents cataphorically through the canals we have at once a remedy for this condition. It matters little which antiseptic we employ, so long as its conductivity of the current is favorable. I have used for this purpose hydrogen dioxid, oil of cassia, chlorid of zinc, and a solution of acetanilid—all with equally good results. The method of procedure is practically the same as that for the anesthetizing of sensitive dentin. After applying the dam or napkin, the cavity and canals are flooded with alcohol and thoroughly dried. A pledget of cotton saturated with the antiseptic to be used is placed in the cavity, and the platinum point of the positive electrode placed upon it. The tooth being devoid of sensation, the current can be raised to the necessary strength in a very short time. An application of from fifteen to twenty volts for about fifteen minutes has been found sufficient. This is followed by an application of iodin (also cataphorically) to the gum for a few minutes, and in no case has a second treatment been found necessary to allay the pain and inflammation and place the tooth in a condition favorable for filling.

The treatment of alveolar abscess by electrolysis of a metallic electrode, after the plan suggested by Dr. W. J Morton, is an important consideration. A small elongated bulb of zinc is fused onto a platinum wire which, in an insulated handle, forms the positive electrode. This bulb should receive a coating of mercury before each application. It is then inserted into the fistula or incision, the negative electrode held in the patient's hand, and the current applied. The electrolytic action of the current dissolves a small portion of the zinc bulb, and we have deposited within the abscess-cavity a quantity of the chlorids of mercury and of zinc. If the application of the current causes pain, a few drops of a cocain solution may be taken up on the zinc electrode and introduced with it into the opening. Cataphoric anesthesia is thus obtained in combination with the electrolysis. By this method abscesses, long chronic, may be cured with two or three treatments. In the treatment of pyorrhea the electric current is a valuable acquisition, both as a means of intensifying the action of such agents as are used in the treatment of that condition and for the stimulating action of the current itself upon the tissues. In illustration of the foregoing methods of treatment, I submit the records of a few cases:

Case 1.—A lower molar had contained a large crown filling for a number of years. Last summer during the patient's stay at the seashore pulpitis developed, and the filling was removed and the pulp destroyed by the seashore dentist. A few hours after filling, however, severe pain occurred in the region of the tooth, and was relieved only by the removal of the filling. A few days later another filling was inserted with the same result. This process was repeated three or four times, until finally the attempt to save the tooth was abandoned. When I saw the case in the autumn the tooth was very loose and sensitive to pressure, the gum inflamed and swollen. An application of hydrogen dioxid was made as described above, followed by an application of iodin to the gum, and the canals and the crown cavity were then filled. In two days the soreness and inflammation had subsided, the tooth had become firm in its socket and could be used with perfect comfort, and after an interval of five months remains in the same satisfactory condition, having given no trouble in the meantime. Attention is called to the fact that, previous to this treatment, a filling was not tolérated in this tooth for more than two or three hours at a time.

Case 2.—Presented conditions very nearly the same as the foregoing, with the addition of a chronic abscess. This was treated through the canals in the same manner and the iodin application made to the gum, with the same favorable result. This tooth had been condemned to extraction before this treatment.

Case 3.—Necrosis in the alveolus of an upper bicuspid, the result of a chronic abscess. The fistula was enlarged with carbolic acid and the cavity cleansed. Cotton was then wound on the platinum point of the positive electrode, saturated with aromatic sulfuric acid, and applied within the fistula. A current of twelve volts was used for ten minutes, an antiseptic dressing made, and the case dismissed. Upon the next examination, two weeks later, the fistula was found to have healed and the tissues presented a healthy appearance. The patient told me this case had resisted other treatment for a year.

Case 4.—Chronic alveolar abscess, upper bicuspid. After syringing with hydrogen dioxid, the zinc electrode was inserted in the fistula and a current of fifteen volts applied for ten minutes. This application caused slight pain, which soon disappeared. At the next visit, a week later, the case presented marked improvement. The swelling had subsided and the fistula was nearly closed. An application of iodin was made to the gum to reduce the slight inflammation which still existed, and at a subsequent visit a cure was found to have resulted.

One other instance in which cataphoresis was found to be of especial value was in a case of facial neuralgia, and while it is not strictly within the limits of the title of this communication, seems to possess sufficient importance to justify its mention. The patient had for some time been under her physician's care for a violent case of facial neuralgia, which treatment failed to relieve. About a year ago the pain having to some extent become localized in the maxillary region, she was advised to consult a dentist. A very careful examination failed, however, to reveal any dental disorder, and she returned to the physician. From that time until within two or three months her suffering had been incessant. Another dental examination was made with the same result as the first. The pain was centralized in the right superior maxilla and was reflected to the inferior maxilla, the orbital, the temporal, and the occipital regions of the right side. A neuritis of one of the dental branches of the superior maxillary division of the fifth nerve was diagnosed, and a cataphoric application of tr. aconite was made on the gum over the upper first molar, using the rubber-cup electrode. On the following day the pain had disappeared, nor has there been any recurrence. The details of one case afford rather insufficient grounds upon which to base any positive statement as to the value of any method of treatment, but the case in question was such a typical one, the result so decided, and the cure effected so apparently permanent, that the writer deems it worthy of consideration.—*Dental Cosmos, Feb., 1897.*

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DENTAL OPERATIONS DURING PREGNANCY. By H. J. Custer, B.L., D.D.S., M.D., Johnstown, Ohio. Read at Ohio State Society, December, 1896. Several years ago a young married lady of lymphatic temperament presented to have a superior lateral incisor filled with gold. Nothing was said regarding her condition, but circumstances indicated the first weeks of pregnancy, and a cement filling was accordingly advised. The patient insisted upon a gold filling, which was finally agreed upon. The cutting of the sensitive dentin apparently caused but little pain, in fact, the several steps of the operation were accomplished with but little discomfort until a finishing strip was introduced, when the first and only rasp caused a momentary muscular paroxysm. After a few moments interval the filling was completed by the aid of disks and the lady left the office without much depression and well satisfied with the operation. The second day after the operation, however, uterine contractions were established, and after several days of rather serious illness an abortion of about the tenth week was completed.

That very serious results do sometimes follow dental operations during the period of gestation is evidenced by the best authorities and by detailed reports of such occurrences. But after investigating the literature upon the subject it seems that the dangers of this period are not generally comprehended, for nearly all the reported cases show abortion to have occurred very soon after dental irritation; and secondly, a number of practitioners testify that they have practiced many years and never knew any trouble to follow; which, while the dentist is perfectly conscientious, would seem to imply that an abortion must follow soon after operation, while the following would seem to indicate that detrimental influences to the fetus, or an abortion, may follow weeks or even months later as a result of irritation, and the dentist loses sight of the case.

In the first place reliable gynecologists conservatively say that at least 70 per cent of all adult females are afflicted with some disease or diseases of one or more of the generative organs. Consequently there is a very prevalent predisposition to abortion. Further investigation shows that nervous reflexes dependent upon diseases of the generative organs frequently aggravate and may cause insanity. Conversely, eminent psychologists testify that nervous and mental diseases often seriously interfere with the functions of the reproductive system, while amenorrhea and premature expulsion of the uterine contents as a result of prolonged anxiety, fright, pain, grief, or strong mental emotion are not uncommonly reported, and there are many abortions other than criminal, whose occurrence is shielded from public notoriety. Hegel reports "one abortion for every eight or ten full-term deliveries." Women who have a diseased uterus, ovaries, tubes, or a pelvic cellulitis complain of neuralgic pains, which frequently find expression in the trigeminus. Gestation is often accompanied by toothache, while the pains of parturition have been known to alternate with pain in the teeth. Pregnancy, which primarily is a physiological condition, on account of the prevalence of pelvic disease often assumes more or less of a pathological nature, and during disease the reflexes are especially liable to be perverted and irregular. From the foregoing clinical observations it would appear that the reproductive organs maintain such intimate communication with other regions, and are so susceptible to reflexes, that it is necessary to press the button but slightly in the region of the trigeminus to precipitate a calamity of no inconsiderable proportions.

Having briefly considered the possible tendencies of dental irritation, let us now inquire into their relation to the causes of abortion. According to Lusk, "The underlying causes of abortion, miscarriage and premature delivery are the same. Causes of abortion are rarely of sudden occurrence. Usually the way is prepared either by changes occurring in the ovum or by certain pathological conditions affecting the mother. In either of these ways a disposition to abortion is produced. When once, as a result of morbid changes, the attachment of the ovum to the uterus has been rendered insecure, causes usually inoperative suffice to determine uterine contractions and the time at which the expulsion occurs. * * * "The disposition to abortion may be due primarily to any disease of the chorion, such as syphilitic degeneration of the villi. In most cases, however, death of the fetus precedes and leads to disease of the chorion." Therefore the causes of abortion are in large measure causes which produce death of the fetus, which having occurred, is followed by expulsion of the ovum, not usually at once, but after a longer or shorter period of time. "There is also a class of women in whom there is neither disease of the ovum nor of the genital organs and yet pregnancy is interrupted, according to present information, from certain personal conditions of nerve irritability. Psychical and physical excitement which would be of small moment in some women, in them is sufficient to empty the uterus."

Recalling the percentage of women with pelvic trouble, and consequently more or less predisposition to abort, the exciting causes should now specially interest us. There is first, *hyperemia of the gravid uterus.* When predisposing causes have weakened the attachment of the ovum to the decidua, *anything* which determines the blood currents to the uterus is liable to produce extravasations of blood around the ovum and awaken uterine contractions, the contents usually being expelled at an early date; or the hemorrhage may be intraplacental, or into the serotina, or into the uterine sinuses. The extravasated blood usually undergoes the ordinary metamorphosis, and the pressure upon the villi produced by the extravasations impairs the nutrition of the fetus and may cause its death, in which instance the expulsion might occur weeks after the exciting cause has operated.

As a second exciting cause, there may be uterine *contraction pro-*

duced by influences which act directly through the nerves, such as are produced by powerful mental emotions. The results of this process are usually soon apparent. However, the contractions may not be sufficient to cause a final result at once. The ovum may change position within the uterus and the abortion be incomplete. Or again, the blood extravasated around the ovum or into the tissues may not bring the case to a final issue for weeks or even months.

Circulatory disturbances and *muscular contractions*, with the possibility of detrimental trophic changes, are then conditions to be especially avoided during pregnancy. As dentists we may unintentionally and indeed unavoidably produce the two former and perhaps the latter conditions as a result of *shock*. The reflexes of either physical or mental shock may stimulate the uterus to contraction, and probably this cause is responsible for most cases of immediate abortion, or those for which we may be held responsible. Investigating the pathology of shock, we find that one condition, though not a constant one, is *an engorgement of the abdominal veins from vaso-motor paralysis*. As before shown, this condition is very dangerous to the gravid uterus and the ultimate results may occur early or be obscured by the future. Shock as most often seen by the dentist is of the immediate variety and frequently observed before the patient leaves the chair.

But there is another variety, an insidious form of shock in which the symptoms appear rather late and are out of all proportion to the gravity of the injury. The patient may leave the office apparently calm and unaffected; may have a good color; quiet pulse and respiration; and nothing appear wrong. But a little later insomnia develops; the pulse becomes soft, quick and rapid; there may be chills followed by fever; and the depression may last for days and weeks perhaps only to terminate in some nervous disorder. Several times during hospital experience I have witnessed this form of shock and have had the opportunity of observing every detail of two such cases occurring in my own practice. Fortunately both cases were only moderately severe and occurred in young unmarried ladies. These cases of latent shock or depression sometimes occur unknown to the dentist and cannot prove other than very injurious during gestation. Besides the liability to circulatory changes and uterine contractions, since the nervous irritability is long continued, there is no evidence contradicting a *trophic disturbance*, especially in a process so entirely dependent upon nutrition, while present but meager information would rather confirm the theory. We may also add that the accompanying fever can in no way contribute to the welfare of either mother or child.

There now remain for consideration *the several reflexes unassociated with shock.* When the trigeminus is irritated, even in health, there is no telling whether any decided reflex will be instituted, or, if any, whether it will be secretory, muscular, vasomotor, or possibly trophic. Or perhaps all the reflexes may operate more or less at the same time. Of these reflexes that of *muscular contraction* is much to be feared, the results being the same as uterine contraction from shock. And it is well worth remembering that nerve centers have the power of augmentation of reflexes, and that reflex muscular contractions are more sustained than those produced by direct stimulus of muscular nerves. Consequently, a blow upon the abdomen might cause a gravid uterus to contract but momentarily, while a stimulus to a nerve center through a centripetal nerve may excite reflex contractions lasting for some time after cessation of stimulus.

Vaso-motor reflexes may produce either dilatation or constriction of the vessels. If the constrictor reflex were but transient the resulting anemia would probably cause no serious disturbance, while the hyperemia of a dilator reflex would be attended with the same dangers previously described under shock.

Regarding the management of these cases, it would seem well to avoid operations during the third, fourth and eighth months of pregnancy, and also during those periods when menstruation would ordinarily occur, for, according to Spiegelberg, these periods are especially risky.

The common method of palliative treatment and temporary fillings will dispose of a large number. But there are some cases of difficult cavities with exposed pulps, phagadenic pericementitis, abscess, impacted third molars, and possibly other complications where non-interference might produce the very results which we are so anxious to avoid.

Cataphoresis and other obtunding agents and the careful approach and manipulation of the dentist all exercise an exceedingly beneficial influence, but the mind still remains active and susceptible and the nerve centers on the alert for reflexes. Something is needed to diminish both mental and physical nervous susceptibility. The combination of whisky and morphin as mentioned by Dr. Marshall is an excellent agent to administer, but many women are so prejudiced against alcoholics that they will refuse them, but at the same time accept other poisons in proportionately larger doses. Antikamnia and condein are good preparations, as also are migrain tablets of acetanilido monobromated camphor and citrate of caffein. A full dose of chlorodyn just before operating produces good results. All of these agents reduce the sensibility to pain and give ease to the mind. But the one remedy which I have used most frequently during the past two years is bromidia, of which each fluid dram contains 15 grs. each of chloral hydrate and potassium bromid and one-eighth gr. each of ex. cannabis indica and hyoscyamus. This preparation lowers the activity of the nervo-muscular apparatus which controls uterine contractions; and being hypnotic, antispasmodic, analgesic and anesthetic, it diminishes both physical and mental reflex activity, also producing a pleasing mental condition. Chloranodyn is fully as efficient as bromidia, but it is more inconvenient to administer. If the patient is very nervous I usually begin two or three days before the operation with one-half teaspoonful of bromidia four times a day. Just before operating I note the time of last dose and condition of patient and then give perhaps double the former dose, since the effects will be antagonized by the operation. To a number of patients, pregnant and otherwise, who previously occupied the chair in a condition of continual nervous and muscular tension, I have administered these agents, with the satisfaction of rendering the patients mentally and physically tranquil in the chair with no unpleasant results following.

Regarding the extraction of teeth, unless general anesthesia be induced the child in utero would be jeopardized, while only the ordinary mortality from anesthesia would apply to the mother. If the operation indicates severe pain and the patient be reasonably favorable to anesthesia, observing the usual rules for choice and contraindications, it would certainly be implied, remembering specially that fatty degeneration and dilatation of the heart, advanced pulmonary disease, and acute nephritis are proper causes for inducing abortion, and also contraindicate anesthesia. In these cases we may operate without anesthesia, and if an abortion follows it is from justifiable causes.—*Ohio Dental Journal*, *March*, *1897*.

EXOSTOSIS. By Douglas E. Caush, L.D.S.I. In introducing this subject, we will draw your attention more especially to those changes that are observed in the microscopical examination of teeth, and to make ourselves clear we state the method of preparing teeth for examination. If the tooth has been out of the mouth for some time, it is at once cut into sections with a fret saw, commencing at the apex of the root; each section being made as thin as possible, and as cut off it is placed in a watch glass containing water. If, on the other hand, the tooth has been recently extracted, we place it in an alcoholic solution of rubin and allow it to remain for some weeks, so that the colored solution may penetrate into the tubuli and any other spaces that are to be found in the tooth; it is then cut and prepared in the same manner as the dry sections, and by this method very beautiful, as well as very perfect sections, showing tubuli, etc., may be obtained.

After the sections are thin enough for examination we stain them by what we call the surface method. It is done as follows:—Into a watch glass, containing an aqueous solution of rubin, the section is placed for about two minutes, then taken out and the surface moisture dried from the section, which is then mounted in hardened Canada balsam. By adopting this method the section becomes stained in the following manner: All soft tissue wherever found is stained a deep red color; the cementum is stained red; the dentin does not take up the stain at all, and thus we have a perfect differentiation of the tissues. Having described the method of preparing our slides, we will now direct your attention to some of the changes that can be observed. To better understand the changes it is well to keep clearly in mind the normal condition of the tissues. The first change that takes place in the development of exostosis is that of the thickening of the alveolar-dental membrane. This is usually caused by some slight irritation; it may be from a filling, or alteration of the articulation, produced either by decay or the loss of other teeth, or from some similar cause. In all cases the result is the same, namely, an increase in the blood supply to the part; this, in its turn, causes increased activity in the cells of the membrane.

Should we at any time have the opportunity of microscopically examining such a tooth, we shall find the membrane much more colored than usual, as well as increased in thickness, owing to the cells in the portion of the membrane attached to the cementum having become more and more active. These cells continuously break up into new cells, and these new cells divide and subdivide until the membrane has a much larger number of cells than is found in its normal condition; the natural result being that a certain amount of pressure is brought to bear upon the cementum at this point. As this pressure increases from the development of the new cells, many of the cells change their character from that of an ordinary nucleated cell to that of a cementoclast or giant cell, having the power of absorbing the cementum at the point of contact. If the blood supply becomes normal at this stage no further change takes place; but should the irritation be kept up, the giant cells continue their activity. Should the condition become chronic, the giant cells thus formed will continue to absorb the cementum, until the whole of it is absorbed away, after which the giant cells pass into the granular layer of the dentin and there continue their work, until a portion or the whole of this layer is absorbed. This absorption takes place in an irregular manner, owing to the difference in the density of the tissue, the difference of density being caused by the more or less perfect calcification of the dentin; on the osteoclasts having penetrated to the denser portion of the tissue the absorption ceases, and the cells themselves again change their character from cementoclasts to cementoblasts, or cementum-depositing cells, and begin their functions of depositing cementum into the spaces previously produced by the absorption. It is not at all an unusual thing to find a number of these cells retaining their soft structure, surrounded by cementum, as if some of the cementoclasts had been slow to change their character, thus leaving portions of soft tissue in the newly-deposited cementum. The new tissue is usually deposited in layers, differing from the original cemental tissue in that it contains a large number of lacunæ and canaliculi, these frequently occupying the position previously occupied by the original layer of cementum. This layer of cementum continues to be deposited as long as the blood brings to the cells material for the development of the tissue. The amount deposited varies much; it may be but a very thin layer, or it may be continuously deposited, until it is many times as thick as the original layer of cementum.

That the development of this tissue is not always continuous may be proved by the manifestation of a number of lines in the section; in these lines we find there are few or no lacunæ, and where the calcification of the new tissue is evidently much more perfect; thus showing that more perfect calcification has evidently taken place during the time of rest from development, this time of rest being caused by the cessation of the irritation to the alveolar-dental membrane, and, as a consequence, slow, but more perfect calcification of the cementum; where this has taken place, it usually leaves a structureless layer of tissue. When these lines exist they are as a rule most irregularly placed, varying much in their distance one from another, so the more continuous the deposition the fewer the lines. It is not unusual to find in some sections, after these periods of rest, that a portion of the new tissue has been absorbed away, leaving semi-lunar markings, which are filled later with new tissue.

When the development of this tissue is rapid we usually find a number of large lacunæ with their canaliculi anastomosing with the canaliculi of the surrounding lacunæ. If, on the other hand, the deposition of this tissue has been slow, the lacunæ are much smaller and fewer in number, with, as a rule, smaller canaliculi; under such circumstances the lacunæ may be isolated and surrounded by tissue, structureless in character; or should the deposition of any one portion of the tissue be more slow than that of the surrounding tissue, the same thing occurs—we get not only more perfect calcification at that point, but an irregular outline of the tissue is produced. It is not at all an unusual thing to find a number of large lacunæ formed immediately after one of these marks produced by the time of rest, the lacunæ gradually becoming less in number until there is another period of rest, so that on examining the section we are able to define the way in which the new tissue has been deposited. These changes may continue for months or even years, and leave behind them indelible markings in the tooth thus affected.

Instead of all or any of these changes taking place, the point of absorption may be very much restricted in area, or the absorption may commence at that part of the root where the calcification of the original tissue has been imperfect, and as a result of this we have a deep yet restricted area of absorption taking place. This goes on until it reaches the granular layer of the dentin, and here, frequently at that point where the absorption has reached the dentin, is a portion of softened or uncalcified tissue; this is rapidly dissolved away by the cementoclasts, and thus a deeper and somewhat semi-lunar-shaped cavity is produced. As soon as the dense tissue opposes the cementoclasts they cease their functions, and after a time a new tissue, cemental in character, is produced, until the whole of the space is filled with cementum. The great difference between this and the absorption, as seen in the earlier stages of exostosis, is the definite line of demarcation produced by the absorption, both in the cementum and dentin, as contrasted with the irregular line of absorption seen in general exostosis.

So far as our microscopic slides show, this form of absorption takes place nearer the neck of the tooth than exostosis usually commences; and, we think, this may be one explanation of the cause of this restricted area of absorption, all the surrounding tissue being more dense near the neck than at or near the apex of the root; it is, therefore, only when the inflammation of the alveolar-dental membrane occurs over an imperfectly calcified portion of the tooth that this absorption takes place. We have in our collection a number of slides showing that this form of absorption sometimes takes place after there has been a certain amount of general exostosis, the absorption passing through the deposited cemental tissue into the dentin, and in this space another layer of cementum is deposited. In some cases we have no doubt that this absorption is the result of a severe attack of periostitis. At the same time we must not confound these markings with those produced by the more acute form of inflammation and suppuration known as alveolar abscess.

Wherever there is a chronic abscess near or pressing upon the roots of the tooth we have absorption, and this absorption is, as a rule, more general in character and covers a larger area than in those cases known as inostosis. In these cases it is not at all unusual to find not only the cementum absorbed away, but the absorption may have gone into the dentin, and in some extreme cases we have found the absorption has not ceased until the pulp-canal has not only been reached, but even a portion of that has been absorbed away. Again, in some of these cases nature appears to have tried to produce a remedy by depositing in these depressions new tissue cemental in character.

We also find in some cases the canaliculi of the lacunæ anastomosing with some of the finer branches of the tubuli, and thus forming a network of minute canals from the cementum to the pulp-canal. We have also found, in many cases where there has been a large deposition of new tissue, that this tissue has inclosed within it a number of canals, passing in different directions; these canals usually have a lining membrane, and to all appearances are blood-vessels of the alveolus and membrane. There is also to be found at times canals of quite another character, passing directly from the pulp-canal, at right or acute angles to the canal, through the dentin into the cementum. In this case the contents of canal are similar to the pulp itself; in some cases we have seen these canals enlarged, and a layer of cementum of varying thickness lining the canal.

These last canals lead us to the pulp, and we now draw your attention to certain changes we have found in the dentin forming the pulp-canal. It is just possible that these changes take place in teeth that are not exostosed, but as our examination has been principally of exostosed teeth, we would like others to tell if similar changes have taken place in the teeth that are not exostosed.

If we examine a tooth with an inflamed pulp we shall probably find that the following changes have taken place in the pulp:—In the layer of odontoblast cells that form the connecting link between the pulp proper and the dentin we find, at that point where the inflammation is most acute, the individual odontoblast cell has been altered in character and appearance; there is an absence of the usual processes, especially those which pass into the dentin, and instead of these we have a cell somewhat oval in shape; frequently the cells are increased in number, and apparently the connection between the dentin and these cells has ceased. This change may be restricted in area; if the inflammation of the pulp has been either very acute or chronic the cells themselves increase rapidly by cell division, and a certain amount of pressure is produced upon the dentin. The result of the cutting off of the supply of nourishment from the restricted area is to produce those transparent zones so frequently seen in microscopic sections of teeth, where there are apparently no tubuli radiating from that portion of the pulp-canal in which these changes have taken place. This may spread until the whole of the dentin between the pulp-canal and the cementum in this restricted area is apparently structureless. We believe that this change is brought about by the more perfect calcification of this portion of the dentin. Should, however, the pulp continue inflamed, we find the original odontoblastic layer becoming thickened, and after a time a number of giant cells are developed in the thickened layer; these cells pressing upon the dentin cause a certain amount of absorption of the latter, and this absorption may be restricted to a single point, or it may be spread laterally so that two or three canals in the roots of the molar teeth may be united into one irregular canal. There appears to be no restriction as to the way in which the absorption will spread from the canals; so varied is it that almost every section shows an alteration in the conformation of the canal.

After a time another change takes place in the character of the cells forming the outer layer of the inflamed pulp; and instead of osteoclasts we have cells capable of depositing a tissue containing lacunæ and canaliculi exactly in appearance like the *cemental* tissue found on the outside of the dentin: this tissue is quite distinct in character from the surrounding dentin, and the line of demarcation between the two is usually very pronounced. This new tissue may vary very much in quantity from that of a very thin layer to a mass large enough to almost fill the pulp-canal and the spaces excavated. That this tissue is not secondary dentin, we think, will be clearly demonstrated by comparing the slides that have just passed before you and the next two, which show secondary dentin in both transverse and longitudinal sections. You will notice in the former slides the new tissue fills up *semi-lunar* spaces where the cut ends of the tubuli of the dentin end abruptly; in the secondary dentin there are no *semi-lunar* markings, and the tubuli of the secondary tissue are more or less connected with the tubuli of original dentin; in the secondary dentin the tissue is always added *directly* to old tissue without any previous absorption, and so, from the start of deposit, decreases the size of canal; this is reversed in the case of the new tissue, as the deposition is always preceded by absorption, and usually contains lacunæ and canaliculi with *no* tubuli.

That exostosis is not of recent date I lately had the opportunity of proving by a microscopical examination of two molar teeth found in the chalk debris within the artificially excavated caverns at Hayes Down, Lavant. With the teeth were associated some flint implements of the later Neolithic type; the age of the teeth probably is *not later* than 2,000 years, and perhaps much earlier. In both of them we found exostosis, and in one of them certainly excavations both on the outside of the cementum and in the pulp-canal. We have also found that these, or similar changes, *have taken place* in teeth of the horse, with even a greater intensity than in those of the human race.—*Jour. Brit. Dent. Assn., March, 1897.*

Letters.

ST. LOUIS LETTER.

ST. LOUIS, April 19, 1897.

To the Editor of the Digest,

DEAR EDITOR:—We have been so busy this month that we have not found time to collect any news, so with your permission will do a little moralizing. We are afraid that the dentists in St. Louis are not very sociable, except as two or three meet for a talk after office hours; several ones do this quite regularly. We seem each one to be so busy and so absorbed in his own affairs that we have no time to think of our neighbors, and visit them only when we go to a dental society meeting here or in some other place. However, we believe this trait is not peculiar to the St. Louis dentists, but it is to be deplored as true of the race of dentists generally. Is not this a fact? We find that men who are engaged in college or journal work are in closer touch with the whole profession, locally as well as abroad, than those who devote themselves exclusively to the practice of their calling. Any effort to raise the standard of the profession seems to draw together all those earnestly interested in that direction, and when the dentists of any community find themselves drifting apart, is it not a sign that they are forgetting the good of their fellows while attending to their own individual advancement? We, personally, are chief among sinners in this respect, so may talk. We did not intend to write so much, but have spoken because we really feel deeply on the subject. Fraternally, ST. LOUIS.

PHILADELPHIA LETTER.

PHILADELPHIA, April 17, 1897.

To the Editor of the Digest,

DEAR EDITOR:—When THE DENTAL DIGEST came on the field of journalism and I was asked to subscribe to it, I said to myself, "What do I want with another journal; also why spend more money?" On second thought I reasoned, the DIGEST is to be the mouthpiece, as it were, for the Dental Protective Association of the United States, and for this reason alone it became a duty to subscribe. This reminds me of the first time I heard of that association. One afternoon I met a "man" on Chestnut street who outlined an association and how it could do great work, and he concluded with, "What do you think about it?" I replied, "It's all very well in theory and imagination, but how are you going to get the dentists to join; and after you have them in, who is going to do the work?" "Well," he answered, "I will do the work." To this I replied, "It is my opinion you will not succeed; but, all the same, put me down for it, first and last."

To-day I rejoice that my prophecy was so far from being correct; and what shall be said of the man—"I will do the work"—for no man in the 19th century in an individual pursuit has accomplished so much for his profession as he has. His fellows in the United States have been protected from annoyance and persecution, and as for the money saved, a low estimate would be *ten millions.*

Do not misinterpret the writer, for he is a believer in patents. Patents are like all good things in this world, if abused they become an evil in ratio to their good.

As the DIGEST made its monthly visits I scanned its pages. One day my eye caught "New York Letter," and I enjoyed it, as I have all of them. One thing in them is so plainly "New York," and between the lines one may read the peculiar egotism that may be found in connection with everything that pertains to New York.

One evening while enjoying a cigar and looking over the DIGEST I discovered "Philadelphia Letter." It started out with an unusual amount of spice for a Quaker town. Did the pepper make the writer sneeze so that he crawled back into his Quaker shell, concluding to have nothing further to do with the loud city of Chicago?

Now, dear DIGEST, if you see fit to publish this rambling talk, I may have courage to send you a letter some other day. QUAKER.

NEW YORK LETTER.

NEW YORK, April 15, 1897.

To the Editor of the Digest,

MR. EDITOR:—We send the following notice from the *New York Tribune* of April 9: "William Wilshire Riley, 81 years old, died at his home in Cromwell, Conn., yesterday from injuries caused by a fall some weeks ago. He was the inventor of many successful articles. The rubber plate for false teeth, a single-track elevated railroad, a life-boat with a balloon attachment, and a tongueless buckle are among his inventions."

The April election of the First District Society selected Dr. Starr for president, Dr. Dean for vice-president, and Dr. Nash for recording secretary. Dr. Nash has held his office thirteen years; he is very popular. We were much impressed with the makeup of the body as it appeared at election this year, so largely composed of a younger class of men, and prospectively a good lot of them, scarcely any of the older members being present. It looks as though they were willing that young blood should infuse the body. We don't see anything bad about such a conclusion. The young must show what they are able to do. New ideas are needed.

Dr. Davenport's article advocating the frequent restoration with amalgam of teeth deformed by decay, rather than the more prevalent use of crowns, is being scored by many practitioners. Just think of the forward movement of this "wicked amalgam." It is coming to this, that if it is not used more it will be a violation of the real interests of the public. It cannot be charged that Dr. Davenport is prejudiced, for he is a level-headed up-to-date practitioner, and well-known for many years as the able editor of the New York Odontological Society. There is a decided feeling upon this matter of restoring the forms of teeth with amalgam and screws. There is an almost unlimited field of usefulness before us, and an opportunity for the display of much inventive genius. We think there could be a form of platina screw, ready for use, produced by the trade, which would expedite the operation of making the restorations; also matrices, to be kept on until the amalgam hardens, that would be of assistance in more perfectly and readily giving the forms. It is marvelous how quickly a missing molar or bicuspid can be supplied on merely the remaining roots, although they are much decayed, often below the gum line. We will call attention to something here that has greatly hindered building crowns of amalgam upon roots, where much of the amalgam rested upon the soft tissues adjoining these roots, viz., the fear that the sanitary condition would be seriously disturbed. This prejudice is not borne out by results. We have improved our opportunity of investigating the extreme use of amalgam by our much respected, careful and ingenious colaborer, Dr. Clowes, of New York. No man has more boldly trespassed on the soft tissues with amalgam than he, and our testimony is from actual observation—we have been agreeably surprised by the results. Really, we do not think that there is any department of practice so open and so capable of producing useful results as this field. We believe that what we have said will create a thoughtful desire on the part of some to show a decided development in this direction. It seems a pity that progressive men should spend their energies and use their influence in decrying an article that has so certainly forged its way to the front against such a tirade of prejudice. We have no hesitation in predicting that amalgam, associated with the porcelain cements, will stand bravely in the front of all other materials for the preservation and restoration of the human teeth. Some will say that this is of course meant to apply to teeth back of the anterior. Yes, in the main; but we are finding that not infrequently very badly decayed anterior teeth can be artistically restored by these materials, both in form and otherwise. It will be found that while many operations in the anterior teeth would seem favorable for using these materials in the minds of some, they may shrink back and say that gold can be associated only where the dividing line can be made, and without the use of the porcelain cements there would be sometimes objections; but the prime objections are removed, because the dark line (by oxidization) is prevented; it does not occur in connection with the cements. While we have made many operations with gold and amalgam without the cements, always obscuring the dividing line, we can now bring this dividing line more into sight and not destroy the esthetic taste by having a black line. Understand us, we are speaking conservatively of this mode of practice—as we define the word at the present day understanding. We speak earnestly of this subject because it is taking hold of the New York practice more than many outsiders are aware.

Hartford, Conn., has after many years a city society. This is as it should be; no city should be without a social gathering of practitioners. Strength is generated by a fraternal coming together. This spirit was what moved large bodies of dentists thirty-five years ago and the result was an activity never before known. For many years it bore much fruit. We do not wish to seem to drop a wet blanket upon the present day movements, but we do not see anything like the spirit we saw manifested during the sixties. We are in another age. It is "Leadership" too much now.

Cordially, NEW YORK.

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-third annual meeting of this society will be held at Peoria, May 11-14, 1897. An excellent program has been prepared and can be found on page 261 of this issue. The railroads have granted a rate of one fare and a third, and the hotels at Peoria have made special rates. The executive committee hope to largely increase the membership at this meeting, and to this end we would urge that every dentist in the state attend this, his state organization.

COMPENSATION FOR ORIGINAL INVESTIGATION.

The question of engaging competent men in the profession to do original work, and of paying them for their time so that they can give the whole of it to this work, is again being agitated, by a letter from Dr. C. Edmund Kells, Jr., in the *Cosmos*, and also by the editor of that journal.

We have been urging for years that this is what the profession should do. At the meeting of the American Dental Association in 1885, held at Minneapolis, we recommended that the association should undertake this work, but it has never taken any tangible form as yet. It is true the American Dental Association expends some money on section work, but thus far this work has not taken very definite shape. To engage such men as Black, Williams and others who are competent is the thing for the profession to do. We have also urged, both by circular and in speeches, that the raising of funds for this work and the control of same should be the work of the Protective Association.

The testing of amalgam is only one little part of what should be done. It is true the question of amalgam is a serious one, and we are disposed to think that amalgam as furnished to the profession and as manipulated by it has been a curse rather than a benefit to humanity. It has certainly been a great detriment to the profession, not one out of twenty-five of the different preparations manufactured being fit for use. And unless one is fully equipped with appliances for testing amalgam, and is familiar with this kind of work, he cannot recognize the difference between a good preparation and a poor one, even if he could spend the time and trouble to test all the amalgam he uses.

From our correspondent in New York we are informed that the amalgam question is one of the exciting topics there at this time. We always look for good to come from such agitation.

AMERICAN DENTAL ASSOCIATION.

We again call attention to the meeting of the American Dental Association at Old Point Comfort, Va., the first Tuesday in August.

Railroad arrangements are almost completed and we feel confident we shall secure a rate of a fare and a third, on the certificate plan, from all the trunk lines. The Southern Dental Association will hold its meeting at the same time and place, also the College Faculties' Association and the National Board of Dental Examiners. One important question that will come up before this meeting will be the consolidation of the two associations into one national organization.

The literary work and work of the sections should also be made prominent and effective this year. Correspond with the chairman or secretary of the different sections and see what you can do to help make the reports valuable.

A program of the meeting, hotel rates, etc., will soon be sent every one whom we think will attend. Send us your name that you may secure one. Those not already members of one or the other of the associations, but who expect to attend, should get the credentials from their local society as delegates to the meeting. Each society is entitled to one delegate for every five members. Let us have a full attendance of representative men this year.

REPLY TO DRS. BLACK AND JOHNSON.

In the March issue of this journal we published the criticisms of Drs. Black and Johnson on our editorial in which we criticised Dr. Black's paper—"Recent Improvements in Filling Teeth."

In our criticism we took exception to the radical and universal method of cutting away the enamel from the approximal surface, both buccal and lingual, to and even beyond the free margin of the gum, where decay has attacked the approximal surface, and restoring same with cohesive gold. But we commended this admirable paper and urged careful study of the subject—the most important in operative dentistry. At least it has seemed so to us, and during the last twenty-five years it has been our practice, as a rule, to restore and preserve the contour of the approximal surfaces. But we did not anticipate the further attack of caries beyond the surfaces of the gold to the extreme suggested by Dr. Black.

We took exception to this part of the essay, not so much because of the difference of opinion, as because we hoped by so doing to get a more general discussion and study of the subject, and an improvement in the methods of practice in better caring for the approximal surfaces. For no one can deny that much of the service rendered in this branch of practice by the profession has been a series of mistakes and failures, although requiring more skill and good judgment than anything we are called upon to do.

The first consideration in any part of dental practice is the securing of a perfect masticatory apparatus, and this holds true to the fullest extent in treating the approximal surfaces of the molars and bicuspids. The way to make these teeth most useful is to preserve or restore the contour so that the patient when chewing does so with comfort and effectiveness.

The one question that admits of difference of opinion is not whether the natural contour shall be preserved, but whether the entire proximal surface of tooth substance shall be cut away to the free margin of the gum, also the buccal and lingual walls, so that the margins of the filling shall be kept clean by the excursions of food in process of mastication, independent of the amount of decay already taken place. We have had the care of many mouths where the preparation and shaping of the cavity had not extended beyond the affected part, so that all parts were readily reached and filled, and these fillings have stood the test of time; but on the other hand, in some cases the decay has recurred or advanced beyond the perfect filling, thus making another operation necessary. We are therefore inclined to think that the error in such cases has been that the entire approximal surface was not protected by gold, thus saving the second operation.

The other question is the time necessary to perform these operations. If Drs. Black and Johnson have such improved methods that they can perform them so much quicker than others they should surely give us all the benefit of their superior skill and knowledge. They should give us the details and let us know wherein we waste our time, and we hope to hear from them as to all the steps in a given operation, also the instruments used. At present we do not take off one minute from the average time we stated as required to make complete and perfect contour fillings of cohesive gold which occupy the entire approximal surface, and which perfectly preserve the marble-shaped surface, each coming in contact with the other in the proper position.

Notices.

A CORRECTION.

On p. 199 of the March DIGEST it states that the American Association will meet the second Tuesday in August. It should read the first Tuesday.

MICHIGAN DENTAL ASSOCIATION.

The annual meeting of this association will be held at Battle Creek, June 8-10, 1897. A cordial invitation is extended to the profession in this and other states to be present. H. C. RAYMOND, Sec'y, Detroit.

CHICAGO DENTAL SOCIETY.

At the annual meeting of this society, held April 6, 1897, the following officers were elected:—President, A. H. Peck; First Vice-President, D. M. Gallie; Second Vice-President, G. T. Carpenter; Recording Secretary, E. Mawhinney; Corresponding Secretary, George B. Perry; Treasurer, E. D. Swain; Member Board Directors, J. N. Crouse; Board of Censors, D. M. Cattell, A.W. McCandless, J. J. Whaley.

ILLINOIS STATE DENTAL SOCIETY—SPECIAL NOTICE.

Dentists of the state are cordially invited to attend the meeting and come prepared to join the society. Any reputable practitioner is eligible for membership and need not fear rejection if properly vouched for by two members of the society. It is the desire of the officers to create a membership of 500 within the next year or two. Will you help swell this number?

J. G. REID, Chairman Executive Committee.

LIST OF LATEST DENTAL PATENTS.

579,785. Samuel H. Barton, Prince's Bay, N. Y. Means for Raising or Lowering Dental Chair.
579,798. Harry E. Hawksworth, Philadelphia. Vulcanizer.

TRADE MARKS:

29,840. Herman C. G. and F. A. Luyties, St. Louis, Mo. Dentifrice.
29,841. Purity Dental Specialty Co., Sullivan, Ind. Dentifrices and Preparations for Teeth and Gums.

CHICAGO COLLEGE OF DENTAL SURGERY.

The fifteenth annual commencement of this college was held at Central Music Hall, April 1, 1897, at 2 p. m. The program was:—Music; Invocation, Wm. M. Lawrence, D.D.; Music; Address, John J. Halsey, M. A., Acting President of the University; Music; Annual Report, A. W. Harlan, A. M., M.D., D.D.S., Secretary; Music; Conferring of Degrees, Truman W. Brophy, M.D., D.D.S., L.L.D., President of the College; Music; Class Valedictory, Enoch Arden Reyber, D.D.S.; Music; Doctorate Address, L. L. Skelton, A.M., M.D.; Music.

TRI-UNION MEETING.

A tri-union meeting of the Maryland State Dental Association, the Washington City Dental Society, and the Virginia State Dental Association will be held at Old Point Comfort, Va., on May 6-8, 1897. A special feature of this meeting will be the presence of a large number of clinicians, who will practically demonstrate the latest theories of advanced dentistry. A cordial invitation is extended to all progressive dentists.

F. F. Drew, Sec'y Md. State Association,
701 North Howard St., Baltimore.

TIME TABLE OF TRAINS TO PEORIA FOR ILLINOIS STATE DENTAL SOCIETY MEETING.

The service of the Chicago, Rock Island and Pacific Railway between Chicago and Peoria is unsurpassed. The morning train leaves Chicago at 9:00 a. m., and reaches Peoria at 3:00 p. m. Those who desire to make the trip at night can leave Chicago at 10:10 p. m., arriving at Peoria 7:15 a. m. For those engaged in business in the city, and who cannot leave until at or near closing hours, the most suitable train is the one leaving Chicago at 4:15 p. m. and reaching Peoria at 9:05 p. m. All these three trains give excellent service, and the return accommodations from Peoria are equally as good—one train leaving at 11:30 p. m., arriving at Chicago 7:10 a. m.; one leaving 6:15 a. m., reaching Chicago 11:00 a. m., and another at 1:55 p. m., reaching Chicago at 7:20 p. m. All trains start from and arrive at the main depot, Van Buren and Clark Sts., Chicago. For further information address Geo. F. Lee, City Passenger Agent, 91 Adams St., Chicago.

PROGRAM OF ILLINOIS STATE DENTAL SOCIETY.

1. Annual address by the President, Dr. C. R. Taylor, Streator, Ill.
2. Report of the Committee on Dental Science and Literature, by Dr. A. W. Harlan, Chicago.
3. Report of the Committee on Dental Art and Invention, by Dr. J. E. Keefe, Chicago.
4. Pyorrhea Alveolaris, by Dr. J. W. Wassall, Chicago. Discussion opened by Dr. A. W. Harlan.
5. Classification of Cavities and Rules Governing their Preparation, by Dr. W. E. Harper, Chicago. Discussion by Dr. C. B Rohland, Alton, Ill.
6. Opinions of the Illinois Dentists regarding Dental Societies, by Dr. E. H. Allen, Freeport. Discussion opened by Dr. Geo. H. Cushing, Chicago.
7. How Shall We Best Insert a Gold Filling? by Dr. Arthur G. Smith, Peoria, Ill. Discussion opened by Dr. C. N. Johnson, Chicago.
8. Diffusibility of Coagulants in Dentin, by Dr. E. Lawley York, Chicago. Discussion opened by Dr. J. E. Hinkins, Chicago.
9. Be a—Man, by Dr. A. H. Peck, Chicago. Discussion opened by Dr. A. H. Fuller, St. Louis.
10. Static Anchorages for the Regulation of Teeth, by Dr. C. S. Case, Chicago. Discussion opened by Dr. Garrett Newkirk, Chicago.
11. The Relations of the Teeth to the Lips and Face, by Dr. A. O. Hunt, Chicago. Discussion opened by Dr. G. A. Thomas, Chicago.
12. Practical Things in Dental Practice, by Dr. J. G. Templeton, Pittsburg. Discussion opened by Dr. Edgar D. Swain, Chicago.
13. Anchoring Large Contour Filings in Incisors, by Dr. L. W. Skidmore, Moline, Ill. Discussion opened by Dr. R. M. Pearce, Rock Island.

14. Report of Supervisor of Clinics, by Dr. T. W. Pritchett, White Hall.

15. Questions submitted by American Dental Association for discussion by local societies:

(a) To what extent and when are we justified in using cataphoresis? Is there danger of injuring the dental pulp or other tissues by its use?

(b) What are the best methods of bleaching teeth?

PROGRAM OF CLINICS.—Dr. E. K. Blair, Waverly. Gold filling in distal cavity of a cuspid.

Dr. G. A. Thomas, Chicago. Fusing porcelain with the electric furnace.

Dr. Gustavus North, Springville, Iowa. Will demonstrate a method of constructing partial lower vulcanite dentures.

Dr. G. B. Dillon, Sterling, Ill. Gold filling in a bicuspid, using matrix.

Dr. R. N. Laurence, Lincoln, Ill. Will treat cases of pyorrhea alveolaris by Dr. Younger's method.

Dr. C. C. Corbett, Edwardsville, Ill. Gold filling in proximal cavity.

Dr. J. W. Cormany, Mt. Carroll. Fillings with Dr. Black's modified alloy.

Dr. E. T. Brigham, Watseka, Ill. A method of using vulcanite teeth—bicuspids and molars—in bridge work.

Dr. R. M. Pearce, Rock Island, Ill. Gold filling with hand mallet.

Dr. C. B. Sawyer, Jacksonville. Fillings with Dr. Black's modified alloy.

Dr. F. Primrose, Springfield. A simple method of fitting a Logan crown.

Dr. C. H. West, Farina, Ill. Alloy filling—distal cavity in a bicuspid or molar—using the Booth matrix clamp.

Dr. J. W. Collins, Lincoln, Ill. A gold filling.

Dr. Thomas L. Gilmer, Chicago. Filling a superior bicuspid with gold—demonstrating scientific preparation of cavity, and restoration of contour.

Dr. B. D. Wikoff, Chicago. Making crown—porcelain faced bicuspid.

Dr. F. B. Noyes, Chicago. Microscopic examination of amalgam fillings.

Dr. Nels Nelson, Chicago. Making bicuspid crown, using English tube tooth; also exhibit of crown and bridge specialties.

Dr. W. V.-B. Ames, Chicago. Demonstration of the underlying principles of cataphoresis.

Dr. P. J. Kester, Chicago. Instrumentation of amalgams.

Dr. C. N. Johnson, Chicago. Prepared cavities in natural teeth.

Dr. C. P. Pruyn, Chicago. Some novel methods of applying the rubber-dam, and wedging.

Dr. Don M. Gallie, Chicago. Building down central incisor corner with platinum and gold.

Dr. J. O. Ely, Chicago. Practical demonstration of cataphoresis.

Dr. W. H. Taggart, Chicago. New method of applying the rubber-dam to difficult buccal and labial cavities—also something in porcelain work.

Dr. S. W. Lakin, Eureka, Ill. Restoration of one-quarter to one-third occlusal edge central incisor, with screw and Watts' crystal gold.

Dr. J. H. Woolley, Chicago. Proper methods of opening pulp-chambers and root-canals.

Dr. I. A. Freeman, Chicago. Filling distal cavity left superior cuspid.

AMERICAN DENTAL ASSOCIATION.

The American Dental Association will hold its next meeting at Old Point Comfort, Va., Tuesday, August 3, 1897. This will probably be the most important meeting of the American Dental Association held in years, as it is expected that the entire question of reorganization will be presented for settlement. It is therefore earnestly desired that each organization in affiliation with the American will make a responsive effort to have a full delegation present at Old Point Comfort, and have this body instructed in regard to the position held by your society in relation to this question.

It is further suggested that each society should devote at least one evening to the discussion of the question: Whether a change in the relations of the two so-called national bodies, the American Dental Association and the Southern Dental Association, be desirable? In this way thought may be crystallized, and each delegate be prepared to meet the subject with the intelligence its importance demands.

Each state and local society which has adopted substantially the same Code of Ethics as that governing the conduct of members of the American Dental Association is entitled to one representative for every five members and fractional part thereof. Blank certificates for delegates may be had on application to the Corresponding Secretary.

By order of the President, Dr. James Truman.

EMMA EAMES CHASE, 3334 Washington Ave., St. Louis, Mo.
Corresponding Secretary American Dental Association.

News Summary.

BLOOD POISONING AFTER TOOTH EXTRACTION.—Dr. Port, of Munich, remarks that, "when we consider the large quantity of microorganisms which flourish in the mouth, it is extraordinary that dental extractions are not more frequently a source of infection." Dr. Miller's book cites only sixty cases, of which about half the number terminated fatally, while the other half recovered sooner or later. Death generally occurred from septicemia, pyemia or meningitis He gives a recent case of a young and vigorous man whose lower molar was extracted by means of the key. He developed fever and died in four days. The autopsy revealed a large abscess in the neck, the pleural cavities held a large quantity of fetid brown pus, while the pericardium also contained pus. The abscess disclosed streptococci and diplococci, and the latter resembled the salivary septicemic microbe described by Miller. —*Brit. Jour. Dent. Sc.*

CONTOURING A NOSE WITH CELLULOID.—At the Liverpool Medical Institution, Mr. Thelwall Thomas exhibited a patient, 15 years of age, whose nasal bones had disappeared in childhood from congenital syphilis, leaving the flat deformed appearance known as "saddle nose." Mr. Thomas modeled a piece of celluloid into the form of nasal bones, strengthened by a keel-shaped piece on the inner surface. This keel fitted between the nasal processes of the superior maxillæ and the lateral portions rested on the processes. The operation consisted in making an incision on the left side of the nose, inserting the celluloid subcutaneously into position and closing the incision by means of horsehair sutures. The operation was performed seven months ago and appeared to cause no irritation, while the personal appearance of the patient was remarkably improved. Mr. Thomas claims that this proceeding has many advantages over the many osteo-periosteal flap methods, all of which leave marked cicatrices.—*Brit. Jour. Dent. Sc.*

PROTECTION OF IRON FROM RUST.—It is stated by Deninger, that by applying a solution of a soluble ferrocyanid to the bright surface of iron a homogeneous and impermeable pellicle of ferrocyanid of iron is formed, which protects the surface from oxidation and so prevents the formation of rust. The solution of ferrocyanid is mixed with a linseed oil varnish containing a small amount of benzol or of turpentine in such manner as to form a homogeneous emulsion. The iron to which this mixture is applied needs no preparation beyond removing any very thick patches of rust which might resist the action of the ferrocyanid.—*Pharmaceutical Journal.*

A FERTILE CAUSE OF DEFECTIVE TEETH.—By Dr. Wm. H. Richards, President of Southern Dental Association, Knoxville, Tenn. Dentists and physicians, in my judgment, do not recommend or prescribe as often as they should the use of suitable preparations for the care of children's teeth. If a proper and agreeable preparation be kept constantly in the nursery the little people will soon take a pleasure in its use, merely for its pleasant after-effects. Thus, through the apparent *play* with the detergent they are paving the way to sound teeth and healthy gums, besides keeping the secretions of the oral cavity free from unhealthy contamination before entering the body.

I have been trying for a long time various preparations of the kind, with a view to settling upon something which I could recommend to my patients without inviting reflections upon my judgment. With this end in view I critically examined the Euthymol Tooth Paste manufactured by Parke, Davis & Co., and I feel safe in saying that I can direct the use of this preparation without expecting anything but good results.

Obituary.

DR. FRANK ABBOTT.

"Dr. Frank Abbott died suddenly late last night at his home, 22 West Fortieth street. He was born in Maine about sixty-one years ago. He gave his life to the study of dentistry, and when he came to New York several years ago rapidly built up an extensive practice. For a number of years previous to his death he was dean of the New York College of Dentistry. A widow and a son, Dr. Frank Abbott, Jr., survive him."—*New York Tribune.*

The death of Dr. Abbott will be a surprise to many, but it was rumored some months ago that he had an aneurism which was threatening a sudden termination of his life. He was in his office all day yesterday, went out in the evening and returned about 11 o'clock, soon after went into a coma and passed away. He will be buried in Johnstown, N. Y.

Dr. Abbott was one of the original number that joined the fraternal coterie of the Atkinson movement. He has been a busy and very ambitious man. It seems not a little strange that he should so soon follow his fellow worker, Prof. Heitzman. Dr. Abbott leaves much behind in the way of work and success. He had brought together an unusually large practice and was well off in this world's goods. Probably no dentist had more acquaintance with the younger part of the profession, and his loss will be mourned by them as well as by the older practitioners. His face will be missed at our dental meetings, and we are reminded that a goodly number of the old familiar faces are gathering on the other shore.

Be ye also ready, for in such an hour as ye think not your summons come.

New York, April 21, 1897. G. ALDEN MILLS.

The Dental Digest.

Vol. III. CHICAGO, MAY, 1897. No. 5.

Original Contributions.

DANGER SIGNALS IN CATAPHORESIS.

By F. F. Fletcher, D.D.S., St Louis, Mo.

Cataphoresis has passed the experimental stage so far as theory is concerned. The electric current *will* carry medicaments through tissue. Sensitive dentin *can* be obtunded and excavated painlessly. Pulps *can* be completely anesthetized and removed without pain.

These are known facts. There are others unknown to most of us, as for instance, in using it for sensitive dentin may we not injure the pulp by too high voltage, or in ways we know nothing of? We must remember that the pulp has not the powers of recuperation possessed by most of the soft tissues. What voltage is necessary to injure tissue?

Some of these machines furnish as high as sixty volts, which some claim will break up cell life and thus destroy tissue. Of course the makers claim this amount of current is to be used only in obtunding pulp for removal, but right here we must recollect that the average dentist is not an electrician, and if he attempts to use the current on sensitive dentin, and the most minute leak is present, the tooth remains unaffected. He turns on more and more until he is using full strength of machine and the tissues surrounding the tooth are being ruined. Then how do you know whether you have a leakage or not?

Will the current as used properly destroy germs, or may not septic matter be carried into parts beyond the tooth?

Some of the accidents mentioned have happened and have been reported. Here is another one of great interest and importance. A dentist in this city made an application of arsenic in the usual manner, and at next sitting attempted to remove pulp, but he found it highly sensitive. To hasten matters he applied cocain with the current and removed the pulp painlessly, but at the next sitting he found the arsenic had been inducted into tissue beyond the tooth. Here was the devil to pay and no funds. Don't say he should have known better—anyone might have done the same thing thoughtlessly.

Never use cataphoresis in a tooth in which any arsenical compound or other injurious drugs have been placed, as the current will carry them through and cause untold trouble.

If pulps die or accidents happen report them promptly to the journals and thus keep others from like errors. Study up on this subject. Act conservatively and report successes and failures.

PULP TREATMENT—HOW SHALL WE JUDGE BETWEEN SUCCESS AND FAILURE?

By William H. Trueman, D.D.S., Phildelphia.

There can be no error in considering pulp treatment successful that immediately results in the comfortable usefulness of the tooth, a comfortable usefulness that continues through the remainder of the patient's life. On the other hand, treatment that immediately results in discomfort, relieved only by the extraction of the tooth, is, unquestionably, a failure. True as these two propositions undoubtedly are, they are but broad platitudes, and when brought to bear upon any individual case may be thoroughly misleading.

A few years ago I treated a pulp for a gentleman who on his last and final visit was very sick—on the eve, he thought, of a frequently recurring bilious spell that would probably confine him to his house for several weeks, and on that account he strained a point to have the work then completed. The impending sickness proved to be the culmination of a life-long progressive disorder, and in a few days he was dead. In this case the conditions of our first proposition were fully met, but how valueless as evidence of the success or failure of the operation is an instance like this.

On the other hand, many a valuable tooth is lost through a mere accident, an accident that reflects not in the slightest degree upon the operator's skill or judgment, or the method or the means he employs, and that does not in the slightest degree compromise the future comfortable usefulness of the tooth. It may result in an immediate irritation that must run its course, and that either by due process of nature or appropriate remedies would in a short time be relieved, with no probability of a return; the patient, either through pettishness, or moral or physical inability, being unwilling to wait for this, resorts to extraction. Such a case fully meets our second proposition, but, does it indicate a failure in pulp treatment?

What I desire to get at is this: Have you any reliable standard by which we can compare one method with another; the value of this or that medicament, or this man's method or procedure with the radically differing one of his professional brother, other than our own individual judgments that may, and we know do, at times widely differ?

I wish to know on what grounds my friend loudly proclaimed at the society meeting last Saturday night that the new method or new drug suggested to him the previous Monday evening was a grand success, he having used it ever since—scarcely a week—without a single failure?

I am anxious to ascertain how or in what way we can know in a week's time, or a month's time, or in a year, whether *this* new method is better than *that* old method, or your way better than mine? I am not satisfied to be informed that the method that I have used with, to me, satisfactory results for a score or more years, must be laid aside because, forsooth, it is in conflict with accepted notions of the present day. I want to know before laying aside methods and means I have practiced and studied for many long years, and with which I have become familiar, and that have seemed to give, so far as I can judge, satisfactory results; I want to know how I can ascertain, in a less time than I have practiced the old method, that the new one is enough better to make it worth while to undertake to learn it.

Indeed, before cutting loose from the old method, I want to know —With which one of the new methods shall I supplant it? It is claimed for each that it is a vast improvement on the old, and with equal persistency the advocate of each claims that his pet is vastly better than the others. I want to know how they get at this. What is their standard? How do they know? What do they mean by success? What do they mean by failure?

EUCAIN provokes hyperemia at the point of application, and should be used with reserve when hemorrhage is to be dreaded. In an instance of bladder tumor, Gorl (*Ther. Monats.*) observed abundant hematuria after its use. Five minims of a 10 per cent solution are sufficient to inject into the gum for the painless extraction of teeth. Three to five minims at the root of each tooth is better than a larger dose for a number at once.—*Wolff.*

THE MOUTHS OF OUR SCHOOL-CHILDREN.

By Carl Theodor Gramm, M.D., Chicago. Read Before Tri-State Medical Society at St. Louis, April 7, 1897

I come to you to-day with a plea for your interest in what to the youth of our land is a veritable Pandora's Box. I refer to the universal existence of malformation of the oral structures and their vulnerability, sometimes initiative and sometimes coexisting with constitutional and local disorders, and always conducive to a lowered physical and mental vigor. I claim your interest in this my theme since you, as practicing physicians, enter the sanctum sanctorum of nearly every home and are in a position to be doctors indeed, that is, teachers there of prophylaxis. And prophylaxis with children, applied to physical development and to character formation, means so much to future generations, families and nations.

Why are there so many mouth-breathers in our school-rooms, boys and girls whose nasal secretions have become vitiated, whose unused nasal passages have become clogged with abnormal growths, very much like vacated country lanes grown up to weeds, whose throats and lungs have become congested because of unfiltered and untempered air inhaled, whose chests have become contracted and shoulders stooping, whose physiognomies, once bright and intelligent, have altered, expressing merely weakness and stupidity; in short, whose physical and mental condition are markedly depressed? What is at the bottom of it? Answer—Ignorance or neglect.

Why is it that so large a percentage of our children, school-children, the children who come to our clinics, present features distorted, often due only to untimely, injudicious loss of teeth, deciduous and permanent? Because of ignorance or neglect.

Why in this day of antisepsis should we meet with cases of gastritis innumerable, due to filthy and diseased mouths? Why so much stomatitis, so many cases of alveolar abscesses, vitiating the system of the developing child and leaving an impress upon the general connective tissues often not to be eradicated? Again, the same answer.

The fact is that these conditions could be avoided by timely guidance and advice, and it is a pity that so many human beings are allowed to become disfigured and are subjected to torture when the ounce of prevention might have secured them against future discomfort. This ounce of prevention, this timely counsel, may come most forcibly and naturally from the physician, for reasons for which I stated at the outset.

Therefore this plea, that the medical profession should interest itself in what has hitherto been a somewhat disregarded field for it. It is only in recent years that oral pathology has been taught in a few medical schools, and even to-day the attendance at these lectures is not compulsory. Trained nurses, as a rule, have no conception how to care for the mouths of those whom they are attending, and the overwhelming majority of mothers are lamentably indifferent and untutored in the care of their children's mouths. One of the principal points of my plea therefore is for the maintenance of a chair or lectureship in every under and post-graduate medical school, teaching this specialty of medicine, which can no longer be relegated to barbers and blacksmiths, a fact due to the magnificent development of dental surgery, brought about by educated, broad and brainy members of the dental profession. These, unfortunately, can serve and educate but a small number of the great public needing instruction in oral hygiene. I plead that every training school for nurses should include the subject in its course. I would plead, furthermore, that teachers in our public schools be instructed to not rest content with having merely hands and faces clean. It ought not to be implied by them that only the exterior, that which shows, must be clean. Without going to extremes, their ethics might be grounded more thoroughly and our children be compelled to come to school with the teeth also cleansed. The mouth is such a common receptacle for all manner of bacteria, and when neglected becomes such an excellent nidus for many that are pathogenic, that cleanliness of it should be enforced wherever it may be.

This brings me to an aside, namely, that the friendly exchange of half-exhausted chewing-gum on the part of children ought to be discouraged, and with it the practice of teachers, almost as bad, of distributing promiscuously to the classes penholders and drawing-pencils which have been handled and mouthed and infected by others the day before. This was the practice in my early youth, and I learn with disgust that all the scientific advancement in practical medicine has not caused this dangerous custom to be banished.

If the medical profession will awaken to the close relationship of oral neglect with general disease, and in accord with stomatologists endeavor to prevent this neglect and the harm arising from it, cuspids will be allowed to remain as the keystones of the dental art and facial expression. The first molar will remain to develop the lower half of the face, deciduous teeth will completely fulfill their original mission, pus absorption from dental abscesses will be a thing of the past, mouth-breathers will follow Shakespeare's injunction—"Shut your mouth and stretch the nostril wide." Our children will be healthier and happier.

CATAPHORESIS.

By J. O. Ely, D.D.S., Chicago. Read Before Chicago Dental Society, May 4, 1897.

Since the title of this paper was handed in to your committee over a year ago the practice has become a great favorite with a large number of dental writers, and the various methods and details of obtunding sensitive dentin by the process of cataphoresis have been described times without number. For this reason I will not present to you a detailed account of methods of procedure, or quote individual cases from practice, but rather attempt to place before you for your consideration the subject of cataphoresis as it presents itself to me after a year's trials and experiments.

It seems that as early as 1833 the principle of cataphoresis was known and used in France for the introduction of medicaments into soft tissues. The *Lancet* of London notes its application in conjunction with aconite for the same purpose in 1859. In the same year Kempton, of London, used the method to anesthetize the tooth and surrounding tissues for the purpose of extraction. These early experiments seem to have been used in dentistry only to obtain a painless method of extraction.

As far as dentistry was concerned, the method seems to have attracted no great attention and there is little to record concerning it until in 1889 Dr. D. F. McGraw, of Mankato, Minn., now of San Jose, Cal., in a paper read at the twenty-fifth anniversary of the Chicago Dental Society, gave a complete description of his method of obtunding sensitive dentin. His description I quote as follows:—"First apply the rubber-dam, wet a pledget of cotton in a solution of cocain and alcohol, pressing the point of positive electrode into the cotton in the cavity, and the negative electrode, with sponge attachment thoroughly wet, to the cheek, and turn on the current.

Rarely will more than four cells be necessary." This, with unimportant changes, is the method in use to-day by the profession.

Dr. F. C. Weeks, of Minneapolis, read a paper on obtunding sensitive dentin at the same meeting, in which he said, "I have used this method of Dr. McGraw's for obtunding sensitive dentin and demonstrated to my entire satisfaction that the application of cocain and alcohol by electricity does anesthetize the pulp, as I have removed ten pulps, all with little or no pain."

Dr. H. W. Gillett, of Newport, R. I., and Dr. Morton again called the attention of the profession to this method in a paper read before the American Dental Association, Aug. 8, 1895, six years after Dr. McGraw had described it fully before the Chicago Dental Society. To Drs. Gillett and Morton great credit is most certainly due for their work on this practice and their most able presentation of it to the dental profession, but the tendency of recent writings to ignore Dr. McGraw in this matter is most certainly doing a great injustice to a man who, if written records are reliable, first presented cataphoresis to our profession in a practical form.

For sixteen months I have been using the electric current in conjunction with cocain to control the sensitiveness of dentin and for other purposes. The experiments have been of the greatest interest to me, and in the large majority of cases have convinced the patients that the era of painless dentistry was at hand. The electricity used has been obtained from 110 volt Edison current. For the control of the current I constructed first a water rheostat, and later an appliance somewhat similar to that suggested by Dr. Custer, by means of which a shunt current is used.

For some time I have been using the cataphoric outfit, for 110 volt Edison current, manufactured by the Dental Protective Supply Company. It is the most perfect apparatus I have seen. The current is under complete control and the appliance is so simple that a child can operate it with perfect safety. Anyone who has access to a 110 volt Edison current can use it, or it can be operated by a storage battery.

I much prefer an appliance that uses the Edison current, as will be easily understood by those who have used the storage battery and have been subjected to the annoyance of keeping it in order. I do not dread the reversal of the current mentioned by some writers, as I have never found the current reversed during fifteen months of constant use. The manager of the Edison Company assures me that such an occurrence is extremely improbable, while the danger from a sudden and great increase of current, such as would result from crossed wires, is almost an impossibility, all wires being underground. In operating by this method the rubber-dam should always be applied at commencement of operation. Extreme care should be used in insulating all metals, either clamps or fillings near the cavity to be operated upon, for which purpose I use chloropercha. I am confident that a large number of failures in using cataphoresis are caused by a dissipation of the current through improperly insulated clamps or fillings.

Holding a pledget of cotton in the cavity by means of an insulated instrument held by the hand of the operator is another cause of partial and often complete failure. Frequent shocks by such a method are absolutely unavoidable. Wrapping a No. 31 platinum wire around a pledget of cotton and forcing same tightly into cavity, then holding wire in place by imbedding in a drop of sticky wax on an adjoining tooth or clamp, is a plan I have used for eight months with perfect satisfaction. It prevents all annoyance from shocks caused by moving cotton in cavity or breaking the current. The cotton must be kept completely saturated during the entire time the patient is in the circuit, as the drug acts only on that part of tooth with which it is kept in contact. To be successful we must have perfect insulation and perfect contact. A number of different drugs have been used, but there does not seem to be so great a difference in their effects as some writers are urging.

A twenty per cent solution of hydrochlorate of cocain in water has been most frequently used, but of late I have been more favorably inclined to the use of a twenty per cent solution of hydrochlorate of cocain in electrozone. A solution of cocain in guaiacol failed to give the remarkable results that have been claimed for it. I think there is a very interesting field open here for experiments and I hope before the year has closed that some advance will be made along this line. I now use the solution of cocain and electrozone and find it reliable and satisfactory, making it fresh each day.

On the advantages of cataphoresis as compared with other methods of obtunding sensitive dentin it is hardly necessary to dwell, for while an occasional operator may be found who has developed some special method or process that will in his hands, in an uncertain proportion of cases give good results; yet in 95 per cent of cases operated upon by cataphoresis I know just what the result will be. I know that within a few moments I can produce absolute insensibility of the dentin, and, if necessary, of the pulp, by prolonging the operation.

The knowledge that no pain is to be inflicted in cutting and drilling a sensitive tooth robs a visit to the dentist's of all its terrors, if not of its annoyances, and the dentist no longer dreads the visits of that class of nervous patients who now make such a drain on his vital powers. Operations that formerly had to be slighted on account of the inability or unwillingness of the patient to endure pain, can now be performed under such favorable conditions that the degree of perfection obtained in each operation is limited only by the skill of the operator.

But is there no danger in the use of this method? I hope there will be a full discussion on this point. Will not hyperesthesia frequently follow this operation? I have seen it in only two cases out of three hundred, and then was not at all certain as to its cause. The malletting on these two teeth seemed as likely to have caused this trouble as the use of cataphoresis.

Some dread the toxological effects of cocain. I have as yet had no indications whatever that the influence of the drug has extended beyond the foramen of the tooth upon which the operation was being performed. Objection is made that the operation is likely to encroach upon the pulp if the dentin is made insensible to pain. I think this objection is well taken, but found that one exposure made in this way was sufficient to correct any desire to see how deeply I could cut.

After a long and thorough trial of the method I know only one disadvantage, and that is the time involved. This is commonly rated as a great drawback, but I think unjustly so. As a rule writers on this subject seem to me to be rather underestimating the time required to obtund the dentin sufficiently to make the operation a success. In very exceptional cases I have been able to perform this operation in five minutes; in very few cases has the time been under ten minutes, and in the majority it has been fifteen or over. As a result of my experiments I am forced to the conclusion that in the present condition, and with our present state of knowledge, fifteen minutes is under rather than over the average time required for producing the desired result. Although it apparently requires a long time to properly obtund the tooth, yet it takes a very few minutes to prepare the cavity when the patient feels that the operation is to be painless, so that any dentist can easily arrange his appointments and office so that it will be possible for him to do even more work, rather than less.

As the result of three hundred operations and sixteen months' experience with cataphoresis, I am convinced that in the hands of the careful operator it is one of the greatest blessings ever given to the profession. That it can be applied to 90 per cent of sensitive cavities and that it is successful in 95 per cent of the cases in which it is properly applied. That there is no destruction of the tooth or of pulp tissue. That there is no danger of injury to gum-tissue if it is properly insulated and a high voltage is not used. That fifteen volts is sufficient to produce the required results. That properly performed, the production of partial or complete anesthesia of tooth or pulp should be accomplished without pain or discomfort to patient in any way. That all patients without exception have been more than willing to pay the additional cost when the length of operation was increased by the use of cataphoresis. That it is of great benefit where it is necessary to remove pulps, for by its use the pulp can be extirpated absolutely without pain. That as a result of its use patients loss completely their fear of dental operations. That from our professional life the nervous strain is almost entirely eliminated. That the proper preparation of cavities is no longer prevented by nervous fears or suffering of patients. Lastly, that dread of the operations being removed from the minds of the patients, necessary work is no longer neglected by them, and the teeth will be kept in much better condition than at present.

CARBORUNDUM WHEELS.

By Geo. M. C. Barnard, D.D.S., Ware, Mass.

One of the best and most efficient methods of cutting down a vulcanite plate is by means of a coarse vitrified carborundum wheel run in the laboratory lathe. The wheel will not clog and anyone will be surprised to see how rapidly it cuts. The advantages gained, besides time saved, are that the mechanic has two hands free to hold the plate with, thereby lessening the danger of undue pressure on it, which is liable to crack gum sections.

Care should be taken not to cut too closely to the porcelain, for carborundum has no more mercy on it than it has on the rubber. The wheel should be run dry to give best results. I say a vitrified wheel should be used because it frees itself of all rubber; whereas a wheel put together with shellac or other gum will heat and form a paste that will clog the wheel. Of course the file must be used to file close to the porcelain in and around fine corners, but the wheel will commend itself to anyone who gives it a trial.

MORE THAN ONE-THIRD of the people of this country live in cities and more than half the doctors are there, too.—*Med. Record.*

HAY FEVER.—Eucalyptus oil, 1 ounce; glycerin, 1 ounce; tincture of opium, 2 drams; distilled water, to make 6 ounces. Use with atomizer three times daily.—*Canada Lancet.*

INK FOR WRITING ON GLASS.—Shellac 20 parts, alcohol 150 parts, borax 35 parts, water 250 parts. Water soluble dye sufficient to color. Dissolve the shellac in the alcohol, the borax in the water and pour the shellac solution slowly into that of the borax. Then add the coloring matter, previously dissolved in a little water.—*Am. Micros. Journal.*

AN OLD JAW.—Mr. Horace Farebrother presented a lower jaw, supposed to have belonged to an Anglo-Saxon, about 547 A. D., which had been dug up near Old Sarum. The arches were well developed and the teeth well formed, without the slightest sign of caries. There was evidence of wear from mastication, and the third molars, which were unerupted, were somewhat misplaced.—*Dental Record.*

SOLUTION PERCENTAGES.—A fluid ounce of water weighs 455 grains. The percentage of solutions is based upon this—one grain to each one hundred grains of water. A 1 per cent solution then will be four and fifty-five hundredths of a grain of the drug to the ounce of water. Approximately, that is four and one-half grains. To calculate any given percentage, multiply four and one-half by the desired strength of the solution. Thus, one of 10 per cent will be forty-five grains to the ounce. A 6 per cent aqueous solution will be twenty-six grains to the ounce.—*Ex.*

FILLING OF CHILD'S TEETH NOT URGENT NECESSITY.—While extracting of a tooth in relief of a toothache may be reasonably within the agency of a person with whom a child is temporarily residing apart from its parents to require, and thus obligate the father to pay for, the appellate term of the Supreme Court of New York holds, in Ketchem v. Marsland, Nov. 25, 1896, that such agency does not extend to the employment of a dentist to fill and regulate the position of such a child's teeth, it not being deemed such an urgent necessity as to warrant such a course. However, the court holds the father liable in this case because of his ratification of what was done by not communicating any dissent to the dentist during three years that elapsed after he sent in his bill.—*Jour. Am. Med. Assn.*

Digests.

MOUTH AND THROAT, AND THEIR RESISTANCE TO PATHOGENIC ORGANISMS. Hugenschmidt (*Annales de l'Institut Pasteur*, Oct. 25, 1896) has inquired experimentally into the reason why wounds of, or operations on the buccal cavity are so seldom followed by infective complications. (1) Bactericidal power of the saliva; Petit, Sanarelli, and recently Albert Mills, have affirmed this power. Sanarelli, however, used filtered saliva as a culture medium, which contains only 0.15 per cent organic matter. The author inoculated saliva passed through a filter with cultures of various organisms, and then inoculated gelatine tubes with it directly, and after leaving it at 37 degrees C. for a quarter, one, twenty-four, and forty-eight hours respectively. In other experiments the saliva was previously heated to 60 degrees C.; thirty-seven experiments showed that the bactericidal action of saliva is very questionable, organisms increasing in number rapidly in it. Saliva warmed to 60 degrees C., and thus deprived of the bactericidal principles analogous to those of blood serum, is more fatal to torula and staphylococcus aureus than before, but warmed or not it has no action whatever on sarcinæ, streptococcus, or cholera vibrios. (2) Mechanical action of saliva. Organisms are diluted and swallowed so that the gastric juice destroys many of them. (3) Sulpho-cyanid of potassium was proved in a solution of 0.06 to 0.20 per 1,000 to have no bactericidal power. (4) Phagocytosis and chemiotaxis. (*a*) Experiments with unfiltered saliva: In the mouth and pharynx there is a true lymphatic sac containing crowds of various kinds of phagocytes under the epithelial layer. Leucocytosis here is a physiological act, and migratory cells are constantly passing on to the mucous surface between the epithelial cells. The saliva was proved to possess the property of positive chemiotaxis, which accelerates the accumulation of leucocytes. The clear fluid obtained on the surface of human saliva after standing in test tubes was introduced into capillary tubes closed at one end. The latter were then placed in the peritoneal cavity of guinea-pigs or mice for eight hours, when a plug of leucocytes about 2 mm. long was found in the interior. Saliva which had previously been kept for twenty-four hours in the warm, and which contained more organisms, produced a longer plug, showing that the attractive power increases with the strength of the culture. Saliva of animals (guinea-pigs and mice) attracts the leucocytes of the same animal. Control tubes containing broth cultures of staphylococcus aureus, which exerts a positive chemiotaxis, and normal saline solution, which exerts none, were also used. Stained cover-glass specimens showed that the leucocytes in the tubes were mostly polynuclear phagocytes. This positive chemiotaxis becomes very marked if there is an open wound in the mouth, the surface being quickly covered with a white layer of leucocytes. These were proved by stained specimens to be able to swallow and destroy different kinds of organisms present in the mouth. Normal saliva does not contain streptococci, but if a guinea-pig's mouth is wounded and a virulent culture inoculated into the saliva, chains of streptococci are found in the leucocytes covering the wound after four hours, and healing is rapid. Thus the resistance of the buccal tissues is due to phagocytosis. (*b*) Experiments with filtered saliva showed that the positive chemiotaxic power is due not to the saliva itself, but to its contained organisms. (5) Other agents in resisting bacterial invasion are the constant normal desquamation of epithelium, which dislodges quantities of microbes, which are then swallowed with the saliva, and the diminution in the number of varieties present by the struggle with the common salivary saprophytes.—*British Medical Journal.*

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A HIGH VOLTAGE CURRENT WILL STOP A THREATENED ALVEOLAR ABSCESS. By William Rollins, Boston. The generator used was described in this journal for October, 1896, when it was recommended to dentists for use in benumbing the dentin. Electricians differ in regard to the voltage, one placing it at fifty-seven thousand, another at two hundred and fifty thousand. The amperage is equally indefinite. When tested before use it ran at a speed of fourteen hundred revolutions, and gave an apparently continuous stream through three-quarters of an inch of air. The patient held the negative terminal in his hand, the positive, covered with cotton, against the most painful place on the palate, which was opposite the apex of the root of the first molar. The feeling of intense cerebral congestion stopped in fifteen minutes; the severe pain in an hour. The gum which beat visibly like a heart became nearly normal. There was no return of the symptoms. In using high voltage currents the following method will prevent the patient from feeling the least sensation from the strongest current which the generator mentioned will give. In the armature circuit place a switch controlled by one of the feet. Have the current turned on the field. Have the patient hold both terminals in the proper positions. Then start the generator by closing the switch. When the sitting is finished open the switch before the patient drops the terminals.—*International Dental Journal, March, 1897.*

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COMBINATION GOLD PLATE WITH CONTINUOUS-GUM ATTACHMENTS, AND PORCELAIN REMOVABLE BRIDGES. By Emory A. Bryant, D.D.S., Washington, D. C. Among the variety of cases to which the methods I am about to describe are applicable, I shall refer more particularly to the replacement of missing teeth back of the cuspids of the lower maxilla, as in such cases, when substitutes are inserted by the usual methods in vogue, it has been the exception rather than the rule that such dentures have been a success; it matters not what materials were used in their construction, these dentures in the majority of cases were partial, if not complete failures. The plain clasps were added to partial plates to confer upon them greater stability, and sometimes the wearer succeeded, in a way, in getting enough use from them to justify the trouble of retaining them in the mouth before the clasp wore the tooth out to which it was attached. But for the purpose of mastication they are as a rule miserable failures. Following plate-work, bridges were indicated, and these have to a certain extent helped us out, but for perfect satisfaction to both the patient and operator the clasp partial plates herein described will be found to be an improvement which fills a long-felt want. This is especially true where all the teeth are missing back of the cuspids in either jaw.

Bridge-work is popular because of its stability under the force of mastication, and it has been my idea to construct a removable denture which would be as equally firm and solid when in use as the bridge. The method here presented has succeeded beyond my highest hopes. After stability, the questions of materials used in the construction of the work is of next importance. For this purpose I have selected those only that are recognized the world over as the most satisfactory in cleanliness and artistic effect—viz., gold for the base-plate, and continuous-gum for attachment and body of the teeth. The length of time required for the complete operation is not to be considered, for it depends entirely upon the case; but no matter what the conditions are, it requires more time in manipulation to the proportion of work accomplished than any other operation in dentistry. While the manipulation is simple and apparent at a glance, it is in the details that the time is consumed. Take for illustration the lower case shown. The open-faced crowns are made and fitted upon the two teeth to be used as abutments; an impression is taken with these crowns in place, and the usual methods followed to make a model, die and counter, etc., and the swaging of the base-plate. For this plate I use 18-carat gold, 26 gauge. In order to make the plate sufficiently strong and rigid from cuspid to cuspid, I swage up a second piece of gold of the same thickness and solder it to the plate between these two points.

The plate is then fitted in the mouth as it is to be when finished, care being taken to relieve pressure upon the muscles as for any case. The plate is placed in the mouth with the crowns in position, and the impression taken with Teague's Impression Compound, removing crowns and plate in the impression. Into this fusible metal is run to an amount sufficient to make a good strong model. Plate is now in the position it is to be when in the mouth, and the crowns are upon a base which will not change nor break.

The position of the guides on the crowns and parallel to each other is next marked, the crowns are removed from the cast and the guides soldered on. These guides should be of platinum-iridium wire, about the size of a large common pin; the clasp is fitted to the guides as close to the crowns as possible. The crowns are placed in position on the casts, with the clasps in place, and the brace to which the clasp is to be soldered is so shaped that the part to be soldered to the plate will also be the abutting edge of the porcelain. Wax in place and remove so as not to disturb their position, invest and solder the brace to both the clasp and the plate; replace on the cast and strike up a platinum base-plate about 30 gauge, over that portion of the gold plate back of the brace, using a counter of fusible metal. This should fit perfectly, so that when the porcelain is baked on and it is set home solidly it will bear evenly all around, otherwise the porcelain will be shattered when it is subjected to the strain of mastication. The plate is again placed in the mouth with the crowns in position, and the bite taken—wax will do; the piece is then replaced on the cast, and the bite run at the same time the cast is attached to the articulator.

The teeth are set up in wax in order to determine where the space is to be located for the attachment of the cylinder and screw-pin. The point where the pin is to be soldered is marked off and a hole drilled, nearly the size of one of the How screw-posts; the hole is then threaded by means of a tap corresponding to the post to be used. The end of the post is screwed in and afterwards soldered to the plate; the other side is treated in the same manner. The pins are cut off a trifle below the occluding teeth; a hole is next drilled in the platinum plate for the pin to go through without touching the sides when the plate is in place on the base-plate. The cylinder of thin platinum is made to fit loosely around the pin, and somewhat enlarged to fit the nut, making a shoulder for the same. This cylinder is fitted to the platinum plate over the hole for the pin, and so closely that it will not require much solder to retain it in place. It is then soldered with pure gold. The plates are next placed in position and the teeth are set up. Continuous-gum teeth are used, and from between two of them sufficient is ground away to form a recess for the platinum cylinder. From this point on the piece is proceeded with in the usual manner for making continuous-gum work.

When the final baking is completed, the two plates are cemented together either with sulfur or chlora-percha, the nuts being screwed down solidly at the same time. The abutment crowns in their respective clasps are next cemented to place in the mouth; at the same time, if possible, the plates should be removed, or at least loosened up before the cement is fully set. When hard, remove the plate and clean away the surplus cement, then replace the plate and tighten up, bending the clasps with pliers until the plate will not move without the application of considerable force to raise it. The patients should then be instructed how to insert and remove the fixture. This they can as a rule master in a few minutes.

My porcelain removable bridges are made in practically the same manner as is the clasp plate; the description of the one virtually covers the other, and therefore needs no special directions. The details in each present themselves as the manipulation progresses, and as none are complicated, I have not undertaken to cover them all—in fact, that is impossible, as each presents them differently.

In making removable bridges by this method, the same judgment must be used as would be required were the case to be a permanent bridge. For the lower I should not advise more than two teeth, or three in the upper, where it is to be a single bridge between the abutments; but where it is to be a clasp plate it makes no difference as to the number of teeth, as the lateral strain is then neutralized by the attachments upon the opposite sides of the mouth. In the lower it is always best to cement the two by a brace-plate. In the upper there is more excuse for neglecting this brace, as the teeth are usually stronger in their surrounding tissues, and better able to withstand lateral strain.

Where the case is to be a bridge anchored at both ends so as to relieve the pressure on the gums, the screw-post and nut should always be used; otherwise, unless the work is heavily braced across the ridge, it would be liable to break. In the plates it is not necessary to use the nut, and the pin may not come through at the grinding-surface if it be so desired; the cylinder being closed at the top and porcelain being fused over it, this would give it the appearance of the porcelain being fused directly upon the gold plate. As patients and dentists do not always remain within reach of each other, and accidents will happen at times, I rather favor the showing of manner of its attachment; then if it should fall to the hands of another to make a repair, it would be apparent at a glance how he should proceed to make the separation. I always instruct my patients in this regard, and though they may forget everything pertaining to it but the fact that the piece is separable, and is separated by first heating it over a flame, the rest is apparent to whomever may have to make the repair.—*Dental Cosmos, March, 1897.*

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CURE FOR DIPHTHERIA, CONSUMPTION, ETC. Not long ago, when diphtheria was raging here, Dr. Geo. F. Reese, a dentist of this city, wrote to the health commissioner and asked him to try the use of his system of using an antiseptic solution, but there was no heed paid to the communication. Dr. Reese declares that the conservatism of old-school methods alone prevents the general use of his system, and the consequent amelioration of most of the ills to which humanity is heir. Dr. Reese's theory, oftentimes put in practice, is to surround the part afflicted with an impregnable wall of death-dealing poison to disease germs, with a result that nature, ever alert to mend, has an opportunity to readjust and make well. In brief, Dr. Reese contends that by the application of an antiseptic solution, the microbes in the air, which he claims pass through the body and attack diseased or weakened parts, are checked in their disastrous work, and all inflammation due to the irritation of these same minute destructive agents is allayed and pain subdued, while health follows.

The people living in the neighborhood of the little shoe store on Division avenue at the corner of Marcey avenue are talking of the case of a boy. A few days over a month ago Dr. Reese was told by one of his sons that their playmate, Otto Sondtheim, 15 years old, was dying from hasty consumption. The doctor knew the people and he went to see the lad. He found a doctor in attendance, who told him that there was no hope, and that if he could do anything to cure the boy it would be a wonder. The boy had a temperature of 104 and his heart was pumping rapidly, with a gurgle at the fourteenth beat, and there was every symptom of an early dissolution of soul and matter. Dr. Reese began using his antiseptic remedy, he says, and at once the burning fever was checked. Later the boy gained strength and left his bed, and to-day he is in a fair way to ultimate recovery. Dr. Reese was well acquainted with the doctor who attended the boy, and when he went to him he says this doctor said at once: "He has to die, but this is a good chance for you to try your remedy." Later, Dr. Reese says, the doctor expressed great surprise and considerable satisfaction at the outcome of his treatment with the antiseptic solution. The doctor who was attending the boy, and who now prescribes once in a while for him, admitted that Dr. Reese had been treating the boy and that, while he believed the lad would die at one time, he is now much better.

Dr. Reese, in connection with the case, said: "I only wish the world could see the advantages of the theory which I have proved will destroy the disease germs that enfeeble the human frame. I am willing to take any case in any hospital and prove publicly by actual application of the antiseptic solution that I can cure where medicines fail. I will work under a committee of doctors, if necessary, and I will take the most serious kind of case, either pulmonary inflammation, tuberculosis, cancer or like diseases." The doctor says he seeks no reward, but wishes the world to know of the great good his method can do.—*Brooklyn Times, May 4, 1897.*

TWO CASES OF TRIGEMINAL NEURALGIA AND TRISMUS ASSOCIATED WITH LOSS OF TEETH. By J. Sefton Sewill, M.R.C.S., L.R.C.P., L.D.S. Two patients lately under my care have presented some points of interest which it may be worth while to record. Both were suffering from severe facial neuralgia, starting from and radiating about the temporo-maxillary articulation. For the sake of clearness it will be well to consider the general characteristics of both cases. (1) *Deficiency in Number of Teeth.*—Both patients were entirely edentulous as regards the upper jaw, and had but three or four teeth in the incisor region of the lower jaw; of the latter, in one case one, and in the other two, were carious and were extracted by me. I would point out, as an important factor in causation, the absence of grinding teeth in both cases. (2) *The Nature of the Attacks of Pain.*—The pain in both cases was paroxysmal, the patients keeping the mouth closed in order to avoid excitation of pain and spasm. In the patient whose case is first described removal of her artificial teeth had this effect. Attempts at mastication had a like result in Case II, but after wide separation of the jaws, while the patient was anesthetized for the purpose of examination, as recorded later, the symptoms were materially reduced in intensity for some days, occurring only under greatly increased stimulation. (3) *The area of the distribution of the pain* in each case presented marked features of similarity. It was partly local; but radiated over the area supplied by the auriculo-temporal nerve, that is to say, over a skin area including the front of the ear and temple, the point of maximum intensity lying in front of the ear along the upper border of the zygomatic process. In one case the pain appeared to be more extensive, though in a minor degree of severity, as it was clearly described as passing down the alveolar margins of both jaws unilaterally. Attention is called to the fact that branches of the auriculo-temporal nerve supply sensory filaments to the temporo-maxillary articulation. (4) *The Condition of Facial and Spasm Trismus.*—This facial spasm was probably of a reflex irritative character, comparable to that seen in other conditions, as, for instance, in tic douloureux, where twitching of the eyelids becomes a marked symptom. It may be noted that the fifth and seventh cranial nerves are intimately associated; their cerebral origins are in close proximity, and communicating branches pass between the nerves themselves and between their exit from the skull and their termination, where the intercommunication is extensive. The jaw muscles were thrown into tetanic spasm during the attacks of pain, producing a temporary trismus. (5) *The atrophic condition of the masseters and temporal muscles* was due to disuse in both cases, and was so marked as to produce sinking in of the temporal region. This is no uncommon senile condition. (6) *Injection of the conjunctiva and increase of lachrymation* was noted in both cases on the affected side, and is also probably a reflex condition, due to the same causes as that already described above when referring to facial spasm. (7) *Absence of disease of the temporo-maxillary joint* was ascertained under an anesthetic. (8) *No obvious disease of the teeth*, gums, or alveoli was detected sufficient to account for the symptoms.

Case I.—A lady of about 60 years of age, looking older, owing probably to her extremely neurotic temperament, was sent to me by Dr. Ferrier. She had suffered for some considerable time—it was impossible to ascertain quite how long—from neuralgia referred generally to the alveolar borders of the jaws, and particularly to the left side of the face and head. On inspection of the mouth it was found that the patient was almost edentulous, having but four remaining teeth, all in the lower jaw, first bicuspids and the cuspids of either side. She was wearing dentures which fitted badly. Further investigation elicited the fact that she never voluntarily withdrew more than one of the plates from the mouth, as shortly after removal of both plates spasm of the facial muscles ensued, and violent neuralgic pains, radiating from the temporo-maxillary joint as a focus, occurred. The upper plate was a complete denture bearing incisor, cuspid, bicuspid and molar teeth; the lower similar in character, but having spaces in lieu of teeth where her own remained. It may be mentioned that the necks—the junction of tooth and gum—of these remaining teeth were highly sensitive to mechanical irritation or changes of temperature; the bicuspids were extensively diseased and required removal. The cuspids were repeatedly dressed with the solid nitrate of silver, this salt having the property of obtunding sensitive dentin. The result was satisfactory. There was no disease of the articulation or jaw other than that confined to the teeth and already described. The treatment to be immediately described in detail was carried out, the result being eminently satisfactory, the troublesome symptoms being relieved for the space of about two years. A few months ago the patient again came under my observation suffering from a slight relapse. On inquiry and examination it was found that one of her plates had been altered by another practitioner, and this alteration had allowed the jaws to relapse into a condition approximating that in which they were when I first saw her.

Case II.—The second case was that of an elderly lady sent to me by Dr. Abbott Anderson. She sought his advice some months ago complaining of intense neuralgia, originating in and radiating from the right temporo-maxillary articulation. She was practically edentulous and unable to separate the jaws more than a quarter of an inch without causing severe attacks of neuralgic pain, darting over the whole of the right side of the face and temple, accompanied by spasmodic trismus of the masticatory muscles, injection of the conjunctiva and lachrymation of and from the eye of that side. Various local applications had been tried without more than temporary success, and I saw her in consultation with Dr. Anderson in order that a thorough examination of the mouth might be made and the existence of dental disease, if any, discovered. There was no obvious physical sign of disease in the joint. Nothing likely to cause neuralgia was found within the mouth, but the patient having for the purpose of examination been anesthetized and the jaws somewhat forcibly separated, it was found that for some days subsequently her pain was sensibly relieved. I suggested that the case presented so many points of similarity to that I have already described that we could not do better than treat it similarly. The patient had, when I saw her, in her possession two small plates, one for each jaw, but had not lately worn them, as they were not comfortable. They were small partial dentures, filling gaps in the front part of the mouth only. In this they contrasted strongly with the dentures in the former case. As in the first case, treatment gave immediate relief to the more urgent symptoms. Practically the neuralgia was cured and the patient enabled to perform the movements of mastication without discomfort or fear of sudden spasmodic pain.

Treatment. The principle of treating these and similar cases is the adaptation of well-fitting dentures so adjusted as to keep at all times the jaws as far as possible in their normal relative position by restoring the normal opposition of molar and bicuspid teeth. The chief difficulty, and one met with at the outset of the treatment, lies in obtaining accurate impressions of the jaws, for in the first case removal of the plates from the mouth set up pain and tonic contractions of the maxillary masticatory muscles; and in the second the patient, in dread of causing onset of pain, would separate the jaws but to a very small extent, while any attempt to take models of the mouth resulted in causing muscular spasm.

Pathology. Loss of grinding teeth, molars and bicuspids, lies at the root of the mischief. Directly consequent upon this loss occur degenerative changes in the masticatory muscles due to inaction; then follows relaxation of ligaments about the joint; the condyle of the jaw, and perhaps the interarticular fibro-cartilage, slips when attempts are made to open the jaws, in this way pressing upon some of the nerve filaments derived from the auriculo-temporal and from the masseteric branch of the inferior maxillary nerves supplying the joint. Indirectly, these nerve filaments are connected with the seventh or facial nerve; the motor nerve of all the muscles of expression to the face. Branches from the auriculo-temporal nerve form one of the principal chains of communication between the fifth and seventh nerves. From the main trunk of the inferior division of the fifth nerve are given off branches to the masticatory muscles and from the ophthalmic division of the same nerve, those supplying the conjunctiva and lachrymal gland. After having been for some time in a state of chronic irritation, the sensory tracts become traversed by exciting stimuli with extreme ease, and consequent discharges of neuralgic pain over the areas supplied by these nerves are frequent and violent.

From the facts which have been mentioned, namely, the conditions which were observed before and after treatment, it may be deduced that the loss of normal relationship existing between the articular surfaces of the temporo-maxillary joint causes in a reflex manner both the paroxysmal pain in the sensory divisions of the fifth nerve and spasm of the muscles of the jaw. Two points favor this hypothesis: First, that the removal of the plates worn by my first patient caused immediate pain, replacement being followed by cessation of symptoms. Second, as already detailed, the relief gained by artificial restoration of the grinding teeth in the second case. I feel more than ever inclined to believe this to be the true explanation, for recently my first case came again under my observation, complaining of slight recurrence of all symptoms described.

Upon questioning her carefully, I found that her dentist in the country had for some reason altered one of her plates, reducing the molar and bicuspid opposition, and allowing the jaws to relapse into a condition approximating that in which they were when I first saw her. I have only to add that six months have elapsed since treatment of the second case without the return of any untoward symptoms.—*British Medical Journal.*

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SOME PECULIARITIES OF THE JAWS. By Dr. L. P. Haskell, Chicago. There is in 95 per cent of the mouths more depression in the region of the left bicuspid than the right. The process is shorter on the left side than on the right, so that if the anterior teeth are arranged close to the gum they will be too short on the left when placed in the mouth. In a majority of mouths the teeth on the left side of the lower jaw in the region of the cuspids are higher and more prominent than on the right. The left side of the lower jaw recedes farther from the median line than on the right.—*Dominion Journal.*

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ELECTRICAL IRRITATION OF FILLINGS. By Dr. A. H. Porter, Philadelphia. Volta's contact force and the chemical are the two rival theories that account for the electricity in a battery. To apply these to dental science, the inference from Volta's proposition is that filling and the tooth produce an electrical tension, and that any fluid existing in a crevice reduces the tension. The generally accepted chemical theory asserts that the fluid is cause of both the tension and release. Hence if Volta's be true and no crevice exist, an anemic tooth is subject to a constant electrical pressure from a filling, which experience proves it will not withstand. Such a force in a stronger tooth will attract a larger blood-supply and build dense dentin. Metallic fillings excite a greater electrical tension than cement. .Volta's position is reinforced by the well-known experiment of soldering metals and noting the opposite action of each on an electrified needle.

The Austen Roberts experiment is more recent—certain metals when solid diffuse into each other in time when in contact. Whether any dental author has pointed out the above distinction, the present writer has no knowledge. Dr. Palmer's electro-chemical theory draws attention chiefly to the destructive action of fluids electrically decomposed. The facts tend to show that positive electricity is nothing but force in matter of high intensity including light, and that negative electricity is nothing but force of low intensity including heat.

Both light and heat excite electro-magnetic vibration. As electricity ceases to be exhibited in a wire, light and heat appear, showing their identity with electricity. Light, like positive electricity, discharges native electricity. X-ray pictures are taken by the (negative) waves (low vibrations) from a kerosene flame, magnets, ordinary anodes and cathodes, as well as Crookes' tubes. The well-known experiment of a coin leaving its picture on a highly polished metal surface without pressure and by mere contact is through the same agency.—*International Dental Journal, March, 1897.*

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INCIDENTS IN OFFICE PRACTICE. By G. V. N. Relyea, L.D.S., Oswego, N.Y. Stratagem at times is as necessary in dentistry as in war. A patient called when the following colloquy ensued: "Some twelve or fourteen years since you filled these front teeth with gold, and they are so nice that I will have nothing but gold in my mouth. My eye tooth is decayed, and if you think it will reach the nerve I will not have it done, but instead will have it extracted. You once killed a nerve for me and it almost killed me."

I examined the tooth and assured her that it was not very bad, it would not reach the nerve. I commenced to excavate, and doing it carefully had it, as I supposed, ready for filling. On close examination, however, I saw the pulp shine through the thin wall and at once abandoned the idea of filling with gold. In my palmy days, when I was ambitious, I would have considered this a grand opportunity for capping. In this case there were potent reasons for not adopting it, and in a future article I will give my experience about capping; when and why—when not and why. To tell her the real condition would have involved objections, explanations, etc. In such a case I retire for deliberation, and in this instance came to the conclusion to ask for time. The gums had been somewhat wounded and I advised her to defer the operation and let the gums heal. Then I applied my devitalizer and covered it securely with a four per cent cocain. In two days I was to see her again. At the next sitting she reported no pain. On examination I found the pulp devitalized and no inflammation. Quietly and without creating any suspicion I gently removed the pulp almost to the apex, then forced pure wood creosote up and advised a temporary filling, and she could have a gold filling later. When next in the chair I showed her the filling, which was white amalgam, and said why not leave it as it is; it does not show from the outside and will save you several dollars, to which she gladly consented. I then told her about my destroying the nerve, removing it entire, unbeknown to her, and such a blank, disappointed expression you can scarcely imagine. I have written this for the benefit of young operators.—*Dominion Dental Journal, April, 1897.*

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HINT ON EXTRACTING. By E. A. Randall, D.D.S., Truro, N. S. I have often seen an operator's face and shirt front bespattered with blood from extracting teeth, while the patient was under an anesthetic. This is unnecessary. I use nitrous oxid as a general anesthetic. The moment that the inhaler is taken from the face I push a small sponge into the mouth; this prevent roots, which I may drop in mouth, from being drawn back into trachea, and absorbs the blood which would otherwise be swallowed or blown out in operator's face, and does not prevent breathing, as patient breathes through nose.—*Dominion Dental Journal, April, 1897.*

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SOLID GOLD CROWN. By R. E. Sparks, M.D., D.D.S., L.D.S., Kingston, Ont. To make a solid gold crown, stamp cusps of thin soft platina and trim to size. Proceed to articulate. It may be dinged or bent to suit the case. Now melt it full of gold scrap of any desired grade. It will now be found that while the platina has retained the shape of the cusps its color has almost entirely disappeared. If any remains and is likely to be exposed it may be removed in the finishing process.—*Dominion Journal, April, 1897.*

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HINTS ON CATAPHORESIS. By Dr. D. B. McHenry, Aberdeen, Miss. Take a piece of insulated copper wire, No. 18 or 20, remove insulation from each end, take one end of the wire, wrap around the small end of an excavator a sufficient number of times to form a cone, and into this insert the plug of positive pole. Select suitable clamp for the adjoining tooth. Around this clamp wrap the insulated portion of the wire, place in position, and bend the free end of the wire so that it will enter the cavity and act as the electrode. This removes the necessity of holding the mouth electrode with the hand, and is less liable to break the contact.

To insulate a filling in adjoining tooth from the action of the current, slip a piece of mica down between the teeth. To prevent leakage at the gum margin, warm gutta-percha and crowd it down between the necks of the teeth.

An ever-ready mode of applying the obtundent is to make the electrode out of a long glass drop tube. Remove the rubber nipple, insert into the small end a cotton wick, and into the long end fix a rubber cork. Through the cork insert a wire full length of the tube. Into the tube place the obtundent. The end of the wick will be found always moist and no overflow. To prevent evaporation when not in use cover small end of the tube with rubber nipple.—*Items of Interest, March, 1897.*

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GENERAL ANESTHESIA. By Dennis David Crowley, M.D., Oakland, Cal. Before Stomatological Club, San Francisco, Feb. 2, 1897. In considering the subject of anesthesia I shall take up chloroform and ether briefly. It is well known that we use chloroform and ether for the equal purposes of destroying and preventing pain. So far as the mind is concerned, the patient is unconscious, but not every nerve, though the nerve sense ultimately passes to the brain. To explain what I mean by the patient becoming entirely unconscious of pain and the nerve sensitive in itself, is most easily exemplified by the contraction of the cremastic muscle in the incision of the chord.

Back in the thirteenth century an effort was made to render patients unconscious of pain. In the early part of this century nitrous oxid was introduced, but it was not used to any extent until 1844, when Dr. Horace Wells employed it. The first anesthetic of consequence was discovered by Dr. Morton of Boston, and was used before the medical profession of that city, which was indeed a revelation in the use of anesthetics. Nothing in the medical world before or since has caused such a revolution. Dr. Morton was greatly honored before he died, and more so afterward. Dr. Liston performed the first operation in England, where ether was used. Dr. Simpson of Edinburgh first wrote on chloroform a year later.

As to the practical application of chloroform, let us suppose you intend to administer chloroform to a patient to-morrow. To-day prescribe a laxative, order a light dinner, and no breakfast for the day of the operation, except milk. If you operate at 11 a. m. the stomach will be empty, and also the intestines. Place patient on the table, loosen the clothes around the neck and waist and proceed to administer the anesthetic. My method of late years is to take a small napkin, turn it into a cone, drop a few drops of chloroform on the apex of cone and administer. There is no rule as to the quantity to use, the constitution and systemic condition of patient being a governing factor. In making the application of chloroform test each case by going slowly—five drops first, then ten drops, but never over twenty drops. Continue the application every fifteen to thirty seconds, with plenty of air. The patient should slowly inhale it until unconscious. It can be administered to old and young, although the old do not take as kindly to it as the young. The amount of chloroform given depends upon the length of the operation; the less given the better. I should advise against giving any anesthetic in a case with phthisis, although in its early stages it is said that chloroform can be administered, but not with the greatest impunity. Another instance of where it should not be used is in case of fatty heart. I would also state that while it may be used where there is epilepsy, I would not advise it.

Before the administration of an anesthetic I recommend the use of whisky in pretty free doses. It can do the patient no harm, and stimulates circulation and antagonizes the depressing effect of the anesthetic on the heart. In the use of any anesthetic there is a condition that supervenes, that is, a slight congestion of the brain, and of the lungs and stomach.

Death takes place under the administration of chloroform from coma, or absence of blood in the brain. When the patient becomes pale stop the use of the anesthetic. I think that one of the causes of coma is uremia. Another cause of death is asphyxia, produced by blood falling into the throat and strangling the patient. I recently had a case in which I operated for stangulated hernia. Several physicians were present. The operation was performed quickly and, as we thought, successfully, not a tablespoonful of blood being lost. In raising the feet to cause the blood to gravitate into the brain, the contents of the stomach regurgitated, filling the trachea, and the patient died on the table. Another cause of death is cardiac paralysis.

When should we use ether, and why not always? I never administer ether to any patient in the beginning of anesthesia where everything else is equal, or at all if I am aware that there is kidney or brain disease. In either case it is not proper to administer ether. In a severe shock administer ether from the first. In kidney disease chloroform first and throughout the operation, but never ether. Again I repeat: In heart disease administer ether, and not chloroform; in brain and kidney diseases, chloroform, not ether. I would say, chloroform can always be administered, except where there is kidney or heart disease, throughout the entire operation. In continued operations, with these exceptions, I advise the use of chloroform. It has been my habit to begin with chloroform and continue the operation with ether. The reason for beginning with chloroform is that if you begin with ether the patient will suffer and strangle more. An instance where you can use ether is where the patient's circulation is poor.

In giving chloroform the pulse sometimes becomes weak and the face pale; in such case give ether as a stimulant. As an anesthetic alone I advise chloroform, except where it is contraindicated. Regarding the safety of these agents, both are safe if properly used. Sometimes the best surgeons are the poorest to administer ether or chloroform.

Before you begin an operation make a few preparations. Have your ether and chloroform present, and two hypodermic syringes. I always keep aromatic spirits of ammonia, digitalis and nitroglycerin tablets handy. Suppose that the patient's pulse is becoming weak, and you are afraid that there is going to be cardiac failure. I inject aromatic spirits of ammonia in the chest or arm. I use 60 drops digitalis, which I inject in another part of the chest or arm; two tablets 1-100 grain each of nitro-glycerin, which I inject into the tissues.

During anesthesia some patients become ugly. Such patients have congestion of the face; they will struggle, and their arms or feet will fly in the air. Is it proper to use force? If the hands are flying put your hand between the hands and face of the patient. Don't take hold. There is a certain consciousness in the patient to resist a great force during this stage. The patient will cease struggling; the weight of the hand will govern the legs, if flying; the less resistance you offer the better. If the patient continues to struggle and afterwards becomes convulsive, take a pair of forceps and draw the tongue well out of the mouth, and the patient will at once take full inspiration. If you have resorted to all these measures and the patient is still unable to breathe, use artificial respiration. When operating on a patient, and he shows signs of reduced vitality, difficult breathing, etc., by continuing operation you will stimulate him.

In administering ether you cannot permit much air to come in contact with the mouth. In administering ether I use a cone of paper. I make one every time and insert a certain amount of cotton, and then pour in quite a large amount (three or four teaspoonfuls or more) at a time. You should grease the face first for protection, as ether is an irritant to the skin. Ether is a stimulant to the heart when weak; therefore, if patient is suffering from shock, face pale and pulse weak, or a leg mangled, begin with ether, never chloroform. Some advocate administering chloroform always; others ether. My experience has taught me that no man should confine himself to one of these agents; neither should it be asserted that they should not be combined, or one to follow the other.—*Pacific Stomatological Gazette, April, 1897.*

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AMBIDEXTERITY. By Herbert Lake, L.D.S., Mitchell, Ont. Ambidexterity, a term applied when the movements and sensations of the limbs on one side of the body are under equal control and command with those on the opposite side. There seems to be an unwritten and yet unalterable law to the effect that man should use one hand rather than the other as the instrument of his will. That is to say, one of his hands is the active or controlling member in all that he does.

Right-handedness means the right hand is the guiding hand, while in work the left one assists. The union is inseparable. In all work which requires both hands the left does as much work as the right, but only as an assistant, and that involuntarily. The active hand is always nearest the work. The baseball player who bats right-handed holds the bat over his right shoulder and has his right hand next the end with which he hits the ball.

The foregoing may also be said of a left-handed person. There are ideas prevalent as to the cause of the majority of about fifty right-handed persons to one left-handed. Some writers affirm that it is a matter of training; that to the untrained child there is no distinction, and as the brain develops, the powers of imitation, together with the training of nurse and mother, bring about the result. There is much in this theory. Take a child before the age of training can begin; hold before it a simple toy. Which hand will be reached out to grasp it? As often the one as the other. Further, say for argument's sake that the child is developing left-handedness. Imprison that hand and see if the child will not adopt the usage of the other. Naturally it will, all theories to the contrary. Set free the imprisoned hand and what is the result? In one case which came under the writer's notice, the happy faculty of being ambidextrous.

There are many degrees and shades of right and left-handedness prevalent in adult life. There are many who are ambidextrous naturally—many to certain degrees showing the natural preference for either the one or the other hand, and yet are indifferent even to preferring the alternate use of both hands. They throw a ball right-handed, bat it left-handed, spring into a race from the left foot, but in the running jump may leap from the right foot. The lower limbs are less closely controlled by the will than the upper. Their movements are more often involuntary, though the moment they are in such a position as to change them from their natural bent the brain is at once called in for a decision. Some writers have attempted to prove that the right hand is the one intended by the economy to be the useful hand, and have gone so far as to say that left-handedness is indicative of a lower degree of intelligence. The idea is combatted by all the observations and tests one can bring to bear on the subject.

We know that where there is a choice of two directions of growth or movement in plants or animals without apparent advantage either way, a preference is shown for the one over the other. For example, among the heavenly bodies the planets and their accompanying satellites follow a similar law; all accompany the earth and its moon save the moons of Uranus, which circle their primate an opposite way. The woodbine twines in its own direction, possibly from left to right, but the climbing hop-vines may reverse that and run from right to left. The grain of the rock-elm is always from left to right, but the ironwood of the northern zones grains in the opposite direction. The squirrel will turn to the right as he spirals up a tree, unless there is danger in that direction; but his cousin the chipmunk almost invariably seeks the opposite course. When the question of moral intelligence is mooted in this connection, what can be said of the coon, who turns neither to right nor left as he shins up out of danger, his heart full of guile and stomach full of stolen property?

Why does man use his right hand more than his left? Can the arrangement of the internal organs be made to account for it? The heart is lying obliquely in the left side. The organs of respiration differ in size and weight. The blood-vessels in the upper part of the body are unsymmetrically arranged. More than one scientist has undertaken to prove this a cause for the action, though it is hard to see that, separate from the brain, any of the organs have aught to do with it. Now, the left side of the brain controls the limbs on the right side, and vice versa. Does anyone venture to say that the left brain is greater in size, weighs heavier, or contains more matter than the right? Popular usage, early training and a predisposition to the right hand accounts for the majority of right-handed persons. It is a fact, however, which cannot be gainsayed, observation has established and tests have proven, that a left-handed person is with that left hand more skillful, more accurate, more steady than is a right-handed one. It is also a fact that a left-handed person is ambidextrous to a greater extent than is a right-handed one. Popular prejudice is against the left hand, and the right is trained to dexterity. Manufacturers of instruments, of utensils, etc., do not allow for left-handedness, and as a result the unfortunates have either to work under a handicap or adapt themselves to the circumstances.

What is the benefit to a dental operator in being ambidextrous? What operations has he to perform in which he would be helped by his ability to use either hand with equal skill? The statement is ventured, and though discussable, is nevertheless made, that instead of being of use ambidexterity would be a hindrance. Time is money to the dentist, and the time lost in selecting instruments, shifting positions, etc., would not suffice to recompense for the advantage gained by the use of the opposite hand. Again, the servant may make a good master, but the master never makes a good servant. The right hand of the operator is the directing, the motive hand. The left is the assistant. A gold filling is in progress. While the right hand is placing the pellets in position and guiding the mallet, the left is adjusting the rubber-dam, managing the saliva pump, holding the mouth-mirror, etc.—a deal busier than the right hand, but still occupying a minor position. Now, let us change places. The left hand directs the work, and training and practice will insure a degree of success unsuspected, but no amount of will-power, practice or determination will enable the operator to perform with the right hand the work of assistance so admirably and yet involuntarily undertaken by the left. You may make the left hand a successful director, but never will the right occupy a subservient position.

As one who has practiced ambidexterity with the desire to benefit thereby, let me advise leaving it alone. The results are no reward for the time spent.—*Dominion Dental Journal, April, 1897.*

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TO OPEN PULP-CHAMBERS OF TEETH AFFECTED WITH PERICEMENTITIS. By R. E. Sparks, M.D., D.D.S., Kingston, Ont. We often have to open up teeth which are very tender to the touch. The pressure necessary to make a steel drill enter the outer layer of enamel, together with the shocks caused by the revolutions of the flat-sided drill upon the uneven surface of the tooth, causes excruciating pain. To avoid this, grind with a small stone a pit at the point at which you wish to enter the tooth. The drill will then run smoothly and penetrate much more easily. When desiring to open on the palatine surface of the incisors or cuspids, after grinding the pit, take an inverted cone bur, a little larger than the drill intended to be used, and cut into the pit the depth of its diameter. This gives a flat surface for the point of the drill to start into, and avoids the shocks before spoken of. Keep the point of the drill well lubricated with oil of turpentine or glycerin.—*Dominion Dental Journal, April, 1897.*

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RECTIFICATION OF A CASE OF PROGNATHISM OF THE UPPER JAW, ACCOMPANIED BY ANTEVERSION OF THE CORRESPONDING INCISORS. By Dr. Vincenzo Guerini, Naples. In 1894 a lady, aged 28, of Naples, came accompanied by her parents to my study to consult me about a very considerable deformity of the upper jaw. An exceptionally pronounced prognathism and a projection outwards (anteversion) of the four upper incisors disfigured the face of the patient, who waited with great anxiety the result of my examination and my opinion. One of my colleagues had told her that by coming to me she might probably be able to obtain a modification of this disfigurement by the redress-ment of the teeth. But to my great regret I was obliged to destroy her hopes and illusions by declaring that an operation of that nature was not practicable. It was a case of osseous exuberance with an exaggerated surface of the alveolar processes, in consequence of which the extremities of the four incisors, especially the middle ones, were separated from the lower incisors by a space of more than two centimeters, so that when the patient closed her mouth not only the incisors, but also a portion of the gum, remained uncovered. This young lady had never known what it was to close her lips, and her profile was monstrous. In order to console her, I told her that the deformity could at least be partially rectified by the removal of the four protruding incisors, and that after cicatrization of the gum, artificial incisors would be placed in their anatomical position. There being no other resource both parents and patient accepted my proposition and begged me to operate at their house.

The following day I went there, having modified my original invention, as a new idea in dentistry had occurred to me in reference to this special case; but I refrained from mentioning the fact to the patient or her family, so as not to create doubts or fears. After having prepared everything for the operation, and obtained narcosis and scrupulous antisepsis, I administered chloroform to the patient and extracted the four incisors; then with a bistouri I detached the entire gingival edge from their respective alveoli, commencing from the left canine to the right; folding back this flap I removed, by means of a small saw, an osteotome and a file, all the external alveolar edge, and also a portion of the internal alveolar edge in the middle. Having with sublimate spray cleansed the part from the slightest detritus or clots of blood, I reapplied the anterior gingival flap; and as towards the center it was slightly exuberant, I cut off the superflous portion and with points of suture fixed it to the palatine flap.

The patient was still sleeping when the operation was finished, but on awakening the first movement was to put her hand to her mouth and to ask for a looking-glass. On seeing for the first time her lips closed and the deformity removed she was seized with a kind of convulsive laughter, caused by surprise and joy; for, in spite of the absence of the four incisors, the face had acquired a presentable appearance. I took my leave, simply prescribing an antiseptic and astringent mouthwash to be used frequently.

The following day I found that everything had proceeded most satisfactorily, and my patient declared that she had not in the least suffered, either during or after the operation, and expressed herself as very grateful. On the fourth day I pronounced her wound healed by first intention and, having removed the sutures, promised that in a month's time I would apply four artificial and perfectly natural-looking incisors. At the expiration of thirty-two days the gums were perfectly firm and in their normal physiological state, as I took the impression of the parts, and three days after the young lady had the satisfaction of smiling and displaying a beautiful, equal and unicolored set of teeth. The necks of the four artificial incisors formed a slight margin at the edge of the gum, and one could have sworn that these teeth were implanted in their respective alveoli.—*Brit. Jour. Dent. Sc., April, 1897.*

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CHLORATE OF POTASH AS AN ANTISEPTIC AND GERMICIDE FOR THE MOUTH. By Dr. Unna. During the past eight years in which I have employed chlorate of potash in this modified form I never had occasion to look for a better cleansing agent for the mouth, tonsils and teeth. Naturally, I fully agree with Miller that the efficacy of this remedy does not solely depend upon its antiseptic value. It is my opinion that it possesses marked tonic properties acting favorably on mercurialized gums and imparting increased circulation. In many other affections of the mouth and tonsils the property of chocolate of potash of favoring secretions is particularly commendable.

To obtain this result the pure chlorate of potash must be used; a small quantity is spread on the tooth brush, applied to the teeth and gums and rubbed to a paste. After rinsing the mouth with clear water, a somewhat salty but refreshing taste remains. I know of no other preparation that will remove so quickly and effectually the fetor oris, which is most apparent after meals and upon wakening in the morning. A number of cases in which this fetor proved sufficiently objectionable to enlist medical aid were promptly cured by the application of chlorate of potash after the patients had been treated for internal ailments.

Chlorate of potash, being a neutral salt, has absolutely no detrimental effect on the teeth; if used in the concentrated 50 per cent form it will promptly check the growth of the fungi for a long time, and in many instances destroy them entirely. Chlorate of potash having been declared a poisonous chemical, it is safer to employ it in the form of tooth-paste; thus the possibility of an accident is excluded. It has been demonstrated that the daily use of potash tooth-paste is the very best prophylactic against caries of the teeth and affections of the tonsils, including diphtheria.—*Notes and Remedies.*

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RESTORATION OF BADLY BROKEN TEETH WITHOUT CROWNING. By S. E. Davenport, D.D.S., M.D.S., New York. Read at Massachusetts Dental Society, June 3, 1896. The above title is intended to express the writer's preference for built-up, patched, banded and riveted natural teeth over the same teeth cut off to or near the gum and crowned. The dental profession, itself a specialty, is being of late subdivided into specialties, of which the most popular one, "crown and bridge-work," is by some unscrupulous men practiced because of its advertising and money-making qualities, and even in the hands of conscientious men is often ridden as a hobby far beyond its value. The writer desires to place himself on record as in favor of both crowns and bridges whenever and wherever the conditions of the mouth and remaining teeth (not the patient's pocket) justify their use; but he desires to emphatically condemn the sacrifice of either whole teeth or parts of teeth for the purpose of crowning or bridging where a more conservative plan is available. It is hoped that this little paper will direct attention to what the writer believes to be a serious fault in the practice of many dentists, due to the great improvement in the methods of crowning and bridging and to the mass of information concerning the same, which is being spread broadcast in the journals.

The impression made upon the mind of the average dentist by all of this is so great that when he is consulted concerning a broken tooth he immediately considers the various methods of crowning, and decides to use one of them, while, if he would give the same amount of thought and ingenuity to the devising of a plan for the preservation of what remains of the tooth and a restoration of the broken portions with some strong material, he would not only give his patient in the majority of cases a more useful organ, but he would not be taking the very last possible step for the preservation of that tooth. Crowning should be, just as it is in fact, *the last resort!* Many instances illustrating the abuse of crowning could be cited from the writer's observation, but he will confine himself to a description of a few general classes of cases. Occasionally he has removed gold crowns for the purpose of relieving painful conditions, and has found underneath live teeth so good, even after the wholesale grinding to which they had been subjected in the fitting of the crown, that he has been able to restore their contour and usefulness with fillings. Both gold and porcelain crowns have been seen by the writer in the mouths of patients under fourteen years of age, children of well-to-do parents, the other teeth being of average strength. Such cases are always from the hands of some practitioner who "makes a specialty" of crowning. Dentists of this stamp do not hesitate to condemn molars and bicuspids having ordinary compound approximal cavities to a hollow gold crown, positive assertion being made to the patient that the tooth is beyond hope of safety from fillings. Such crowns are usually put on without regard to contour, and as a consequence food crowds in and decay begins at the gum. Of course, when a tooth is once cut off and crowned it is almost impossible for other dentists to decide whether crowning was necessary or not, as all direct evidence is usually destroyed. The general condition of the other teeth and the density of the tooth-substance are about the only guides remaining, unless some opinion can be formed from a knowledge of the dentist whose judgment was followed.

One very weak point in crowning is the almost universal use of zinc phosphate for the cementing material. Gutta-percha is so much more reliable and durable as a cement, besides allowing the crown to be removed upon the application of heat whenever necessary, that it seems strange more operators do not use it in preference to the phosphate cements.

Amalgam properly selected, prepared and packed is, in the large majority of mouths, a very durable material, and it is, of course, the sheet-anchor in the building up of broken teeth, with the possible exception of the incisors, even though porcelain or gold, or a combination of the two, may be used for the purpose of hiding the amalgam from view. Dr. George S. Allan, of New York, in his recent able paper upon the subject of contouring, justly places amalgam among the "constants" of his equation, and whenever a method of restoration or partial crowning can be adopted which will admit of the use of amalgam in place of the usual zinc phosphate, a great element of strength and durability is certainly added to the finished operation.

While the writer would prefer to leave to every dentist's ingenuity the methods most suitable for the restoration of broken teeth, provided each operator would give his thought to the preservation of what remains, rather than to the cutting away of everything in sight preparatory to crowning, it may not be out of place to briefly describe a few methods which have been of great service to the writer, and may, when modified to suit the special case in hand, be of some help to others. Before describing any certain methods it will, perhaps, be well to say a few words about some of the mechanical devices common to many operations. Metal pins for use in the roots of pulpless teeth as anchorage posts may be made of platinum alloyed with iridium, gold alloyed with platinum, or of stiff German silver wire, the latter being, of course, much less expensive but not quite so reliable for the demands in all respects as the first two named. This wire in several different sizes (say Nos. 3 to 7 of bur-gauge) should be always at hand, and before being used a shallow screw-thread should be cut upon it merely for the purpose of giving proper hold to whatever plastic material may be used in connection with it.

The writer prefers to select a screw a trifle smaller than the calibre of the prepared root-canal, and cement it in place with zinc phosphate, rather than to use a screw slightly larger than the canal, depending upon the thread cut in the dentin by screwing it in, as some operators do. What has been said above against the use of zinc phosphate refers, of course, only to its use in locations reached by the saliva. Stiff German silver is not as rigid as the other wires referred to, but will always answer if two roots can be utilized, a pin being placed in each. It is not affected by mercury, nor is ordinary clasp metal—gold and platinum—by the proportion of mercury in amalgam, though pure mercury will sometimes affect it slightly. Stiff German silver has been referred to because there are two varieties of the metal obtainable. The largest round bur used in preparing the root-canal for the reception of the metal pin should be measured in the bur-gauge, and a pin just one size smaller used.

The next adjunct of importance in many of these operations is the ring matrix of thin steel or German silver, which every dentist should have at hand in all sizes and widths. They are easily made, a little muriate of zinc and soft solder only being necessary to join the ends, care being taken to place the point of union against tooth-structure when they are to be used with amalgam, so that the solder may not be eaten by the mercury. Thin steel of a variety of thicknesses suitable for the making of such matrices is now obtainable at most dental depots, though at a higher price, as is usually the case, than if the same be purchased of houses in that special line of business. They are useful daily to assist in the shaping of plastic fillings, and can often be made to serve as a help in contouring with gold or gold and tin. Their use is also indicated to encircle teeth having approximal decay extending some distance below the gum, the rubber-dam being easily applied after the placing of the matrix. A box, something like the one now shown with numbered pins for holding and separating the ring matrices according to size, is easily constructed, and with the measuring mandrel completes a most useful adjunct to any office.

Gold-faced platinum, which is pure gold welded upon pure platinum, is so useful in many cases of reconstruction that it should be referred to here with the other standard helps. It is very soft and can easily be made to conform to any surface, and the platinum side is, of course, valuable when amalgam is to be used. For ordinary permanent bands of gold-faced platinum, No. 32 is about the right thickness, thought when a split molar is to be banded a heavier number would be better, because of the great strain which would come upon it.

One of the most common accidents which dentists are called upon to repair is the superior bicuspid from which either the buccal or palatal face has broken, often to the gum line, carrying away frequently both approximal fillings. Such teeth are usually pulpless, and the remaining portions of the crown can be retained, and the contour restored either with amalgam or with a combination of amalgam and porcelain as follows: If the buccal wall is still standing, a strong metal pin should be cemented into the root and left nearly as long as the finished palatal portion is designed to be. All soft and frail edges having been cut away, a temporary band matrix, similar to those shown, is selected of a size suitable to represent the proper contour of the finished tooth, and is put in place outside of and around the broken crown and the pin, care being taken to fit the matrix accurately to the gum line above the break. The ring matrix is then filled carefully and solidly with amalgam, the first pieces quite plastic, to enter all inequalities about the pin and broken tooth, but hard and dry amalgam should be used when the operation nears completion. The ring should be left on the tooth for at least six hours to support the amalgam until fully hard, when it should be removed and the amalgam shaped and polished.

Should the buccal wall instead of the palatine be broken off, a cross pin porcelain facing of the proper size and color should be selected and ground to fit the buccal aspect of the tooth just under the edge of the gum. The pins of the porcelain are now fitted into a narrow scrap of platinum, or gold and platinum, and soldered with eighteen-carat solder. This cross-piece of metal is attached to the pins near their ends at a sufficient distance from the facing to allow a screw to pass through the square opening thus made. The screw is then cemented into the root, the porcelain placed in its proper position with its joined pins encircling the screw, and a temporary band matrix of proper size is used to surround the various parts of the combination. Enumerating these parts from without inward, there are the steel band, the porcelain facing, the screw, the palatal wall of the natural tooth, and again the steel matrix. Amalgam is then packed into the matrix and all about the pins of the porcelain, the screw which is secured far up in the root, and into the inequalities of the palatal wall of the tooth. When the matrix is removed the next day and the amalgam finished, the result is most pleasing.

Should the broken bicuspid have a living pulp the palatal portion could be contoured with amalgam packed into a band matrix, a good anchorage being obtained at the cervical wall, and care being taken not to build the filling out to the shape of a normal cusp. When the buccal wall of a living bicuspid breaks, the porcelain selected should be backed with a piece of thin gold-faced platinum, the backing being extended to form a permanent band around the palatal wall of the tooth and amalgam being built into the band between the porcelain and the remaining tooth wall. Should it be a second bicuspid in a man's mouth, a porcelain facing would not always be necessary, in which case a permanent band of gold-faced platinum should be carefully fitted around the remaining wall and the neck of the tooth and filled in solidly with amalgam. This band should be almost as deep as the required length of the tooth.

Where molars break so badly as to prevent the use of any of the above described methods, the writer prefers often to use an open band of gold-faced platinum fitted carefully to the gum line of the remaining portions of the tooth rather than a finished and more esthetic gold crown, for the reason that after cementing the screws into the roots and placing the fitted band in position a good view of the interior can be obtained while amalgam is being packed against the broken margins of the tooth and about the screws until the band is full.

Strict contour can be practiced in all these methods, care being used in the selection of the ring matrices and in the fitting of the permanent bands, the material of which both are constructed being so thin as to be easily burnished out to even an exaggerated contour before the introduction of the amalgam.

When two or more screws can be anchored well down in molar roots it is perfectly safe, and adds to the good appearance of the finished operation to groove the amalgam at a subsequent sitting and cover it with gold. Aside from the improved appearance, gold certainly makes a better and safer masticating surface than amalgam almost anywhere, the amalgam being so brittle that small pieces chip off from those margins which receive the greatest force of occlusion, decay resulting. So hard is amalgam that it does not wear down to keep pace with the surrounding tooth-substance, which fact causes it often to act as a wedge, thus helping to destroy the tooth it was intended to preserve.

Devitalized superior cuspids often break seriously, leaving but a shell which would not of itself hold any sort of filling for a great length of time. It seems to be the general custom to crown such teeth, but should there be enough of the labial enamel remaining to give a fairly good appearance, the writer derives more satisfaction and he believes a stronger result from cementing a screw into the root and restoring the contour with amalgam, zinc phosphate being used against the thin labial enamel to prevent the amalgam from showing through. At the next sitting the amalgam in sight is grooved and covered with gold.

A word should be said in commendation of those conservative operators who have withstood the onward march of incisor crowns of all descriptions, their great manipulative skill and knowledge of the principles of dental architecture enabling them to restore with gold the portions lost by decay, accident or wear, often preserving pulps alive and postponing for perhaps ten years or more the evil day when a crown may become necessary.

Much pleasure is taken in referring here to the "gold bandage" devised by Dr. J. F. Adams, of Worcester, a description of which was published in THE DENTAL DIGEST for January, 1896. It is certainly a most valuable expedient for preventing fracture and decay of frail teeth and for the protection of worn and eroded surfaces. The idea is susceptible of much expansion, and probably all who take advantage of Dr. Adams' originality will find extended and varied uses for the gold bandage.—*International Dental Journal, April, 1897.*

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CAPPING EXPOSED OR NEARLY EXPOSED PULPS. By Dr. W. A. Lee, Allegheny, Pa. Read before Odontological Society of Western Pennsylvania. First, I will describe my idea of a pulp-cap. It must be a disinfectant, an antiseptic and antiphlogistic, and most important of all, a non-conductor of thermal changes. It should invariably fit closely and accurately the surface to be covered, being at the same time firm and unyielding. As a disinfectant I have found nothing better than pure beech-wood creosote. As an antiseptic and antiphlogistic, iodoform has proven the best. As a non-conductor capping material I have found gum copal, dissolved in sulfuric ether, the most satisfactory.

In capping exposed or nearly exposed pulps, apply the rubber-dam. If possible, open the cavity, so as to give a good view of the interior; remove all debris and softened dentin, being careful not to impinge on the pulp. I now take my disinfectant (creosote), saturate the cavity with it and wipe dry. Iodoform is introduced, followed by the application of copal ether varnish, a little thicker than cream. This is applied with a small pellet of cotton and dried with warm-air blasts. A number of coats may be applied if desired. When the tooth is not sensitive to a blast of cold air it is sufficiently lined. If the exposure is large, I always place a piece of asbestos paper, cut to shape of the floor of the cavity, into the varnish before it hardens, pressing it down gently, then revarnish over the asbestos and dry. I then place a thin mixed paste of oxyphosphate of zinc in the cavity over the cap. This, however, should never be pressed or forced into place, for injury may and is almost certain to follow any compression of the pulp. The cement must set thoroughly before filling with either gold or amalgam. Besides being a non-conductor, and adapting itself perfectly to the surface covered, it protects the sensitive tissue from the irritant action of the phosphoric acid used with the cement. This is the best method of capping that I have yet found, the material being a non-conductor of heat and cold, soothing to the pulp, and a preventive of all inflammatory action.—*Ohio Dental Journal,* *April, 1897.*

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THE SEVIER CROWN. By Dr. Chas. H. Sevier, Paris, Tenn. The profession will undoubtedly appreciate my method of making a gold crown. Having a tooth with large cavity, fill the cavity with soft wax, ask patient to "bite," trim off excess, and contour to the proper shape. Having done this, take plaster impression, from which procure a model of tooth to be crowned. Cut said tooth from the rest of the plaster model, following gum margin in so doing. Then melt some low melting but hard metal, such as Melotte's or Babbit's; pour into a section of rubber hose an inch in diameter and about the same in height; just before it sets place the plaster model, cusp downward, in the metal; pack it well around the edges of model of gum line; allow to cool, then dig out plaster.

Having an exact impression of the tooth in the metal, take wire measurement of neck of tooth, and if you have not the Morrison outfit, borrow or buy one. Carry the gold plate down to the number of die that exactly fits into wire measurement. Having your gold cup formed of proper size, force it by a few slight taps of the hammer into the metal impression; put small shot in the "cup" and stamp down, using die one size smaller than the number which the wire fits. Mark the margin line on the protruding rim of gold; heat metal nearly to liquid state, after having *first* picked out the shot, and push the crown out of the impression metal; cut off gold at marked line and crown is ready for the tooth. Grind off the natural tooth and no bite is necessary, as the crown is an exact reproduction of the tooth to be crowned.—*Items of Interest*, *April, 1897.*

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INSANITY OF ENGLISH PEOPLE. Prof. Holt Schooling has recently completed his investigation relative to the sanity of the English people; and he concludes that one person in every 360 of the population of Great Britain has some form of insanity. He gives a very interesting table of his deductions. In every 10,000 of the

English and Welsh population 31.4 people are insane. In 10,000 of the Scotch population 33.6 people are lunatics. In an equal number of Irish 40.3 people suffered from insanity. As among the chief causes, with the percentage of each in classes of a hundred, he gives the following: Drink, 33.6; domestic troubles, 15.1; mental anxiety, 13.4; old age, 13.2; adverse circumstances, 13; accidents, 6.5; religious excitement, 4; love affairs, 3.2. This places the blame heavily on the use of alcoholic stimulants and emphasizes injurious effects of all liquors capable of producing loss of sensation.—Trans. by Dr. B. J. Cigrand, from *Journal Der Heilkunde*, *March*, *1897*.

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ENCYSTED TEMPORARY TOOTH. By G. Lenox Curtis, M.D., New York. A lady was once referred to me by Dr. Marrick, who had cared for her teeth until the bicuspids had erupted, when she moved to a western city, and at the age of thirteen her dentist there noticed a fistula near the lower left first bicuspid. For more than a year he tried in vain to indicate the cause of pus, and thinking possibly the pulp in the second bicuspid might be dead, he extracted it only to discover his mistake. The patient returned to Dr. Marrick in September, 1891, who discovered the disease deeply seated in the bone. In January of the following year I saw the patient. Passing a probe down along the fistula, I discovered beyond the mental foramen an opening in the substance of the jaw about the size of a cherry. Here I readily detected the enamel of a tooth and operated, removing a perfectly formed first molar of the temporary set. One root was nearly absorbed, and in the masticating surface there was a large cavity, most of the enamel being covered with salivary calculus. The wound healed rapidly and perfectly. Two years later I had a report from the patient that no untoward symptoms had presented.—*Items of Interest*, *March*, *1897*.

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EMPTY PULP-CANAL. By Dr. Hyatt, Brooklyn, N. Y. I came across a case last summer which was new to me. I was cutting down a bicuspid tooth to crown it. There was a cavity—not a large one—on one side, and in removing the decay I found an exposure of the pulp. I treated it, capping it with asbestos paper and inserting cement filling probationally. The patient then left town, returning in a week, when I proceeded to complete my operation. In grinding the tooth I removed the cement filling and the asbestos, but to my amazement I found the pulp-chamber empty wholly to the end of the root. When I first exposed that pulp it bled freely, yet within a week's time there was nothing there; the canal was perfectly dry. The patient, an old friend of mine, said probably it was like some dead tree we have all seen, on one end of which there is a little green twig. In this case the pulp was probably dead before I commenced operating on it, and perhaps just the corner I touched had a bit of life.—*Items of Interest*, *March*, *1897*.

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EUCAIN IN DENTAL PRACTICE. By Dr. B. Dzierzawski, Warsaw. My experiences with eucain date from August last; prior to that time I employed ethyl-chlorid. There were many reasons why I hoped to reach a safer anesthetic than the latter; among which were the great difficulty of directing the stream to such a point as I desired; the profuse flow of saliva; the impossibility of anesthetizing both surfaces of the gums at the same time; the pain which it produced; the brief duration of its power; its brevity of action; and lastly, the great cost of this anesthetic agent. Further, ethyl-chlorid does not induce complete loss of sensibility, and often when employed to produce local anesthesia it accomplishes general insensibility; and these decided disadvantages have spurred me to investigate other drugs.

Relative to cocain, I must say that it does not effect when applied locally or externally a sufficient anesthetic power to bring about even approximate insensibility; and when a very strong solution is used it is dangerous to life. A one per cent solution has often given serious trouble. During the present year I extracted about 100 teeth with the aid of cocain and had four cases of poisoning, three of which became alarmingly serious, although I employed but one-sixth grain. And a one per cent solution is not powerful enough when removing roots affected with periodontis. Among the unfavorable points in connection with cocain I mention:—the possibility of poisoning, even with a weak solution; the impossibility of injecting it when there is inflammation of the peridental membrane; its uncertainty in weak solutions; the secondary hemorrhage which is liable to occur.

Being a firm advocate of local anesthesia, my attention has been directed to eucain. I have employed the latter agent on 81 private patients—75 times in extractions and 6 times for other treatment.

I used a ten per cent solution in 16 cases for 27 extractions, using a quarter to one syringeful (2-5 to 1½ grains eucain), and in one case I employed two syringefuls (3 grains). In no case were there any symptoms of poisoning or faintness, as frequently occurs with cocain. In the case where I used two syringefuls the patient was somewhat dazed during the operation, though her pulse was not accelerated; she did some vomiting, yet slept well that night. None of the other patients gave evidence of any unpleasantness. The anesthesia of the ten per cent solution was complete, and in two of the operations the patients were not aware of the primary steps in the operation. In several cases, where a number of teeth were to be removed, I employed eucain solution on some teeth and cocain solution on others; the former agent produced complete insensibility, while the latter only approximated this state. The injection of the eucain may have been slightly more painful than the cocain, yet if the gum were painted with a solution of eucain prior to the injection very little pain was felt. Three patients had a little swelling after the operation; in seven there was no suffering, and in six the effect of the eucain was unnoticeable. I used a five per cent solution in 46 cases and no general symptoms manifested themselves. The dose of eucain was never more than three-quarters of a grain. The following points I schedule relative to my experience with eucain: (1) It possesses full anesthetic powers and is free from toxic effects. (2) A five per cent solution is sufficiently powerful; the doseage ¾ grain. (3) A five per cent solution is more effective than one per cent of cocain. (4) Inform patients that there may be slight swelling. (5) Eucain injected into abnormal tissues possesses little anesthetic powers. (6) The injection must be made slowly, thus spreading the drug. (7) Blanching of the tissues shows when sufficient eucain is present. (8) Any further injection must be made external to blanched tissue. (9) The injection should be deep-seated—superficially it gives trouble.—Translated by Dr. B. J. Cigrand, from *Zahnaertzliche Rundschau, January, 1897.*

A WESTERN EXCHANGE says that a practical revivalist requested all in the congregation who paid their debts to rise. The rising was general. After they had taken their seats, a call was made for those who didn't pay their debts, and one solitary individual arose, who explained that he was an editor, "*and could not, because the rest of the congregation were owing him their subscriptions.*"

Letters.

REPLY TO DR. BOICE.

PHILADELPHIA, May 20, 1897.

To the Editor of the Digest,

DEAR SIR:—There appeared in the February number of your journal a notice of the official organ of the alumni of the Philadelphia Dental College, "The Stomatologist." In the friendly notice was a statement that it was issued in the interests of the Alumni *Association;* the title of the organization is the Alumni *Society.*

One of your correspondents comments upon this error of title. Indeed, some explanation seems necessary in this direction. As an alumnus of the Philadelphia Dental College of nineteen years' standing, who has taken a personal interest in the affairs of the institution. I am surprised to know of the existence of a Philadelphia Dental College Alumni *Association.* There was such a body, I believe, which led a decrepit existence for several years, and about ten years ago was strangled by politics; it may be that your correspondent could furnish the details of that strangulation.

Our Alumni *Society* includes in its membership all but a few of the two thousand five hundred graduates, is in a flourishing condition, holds regular meetings and transacts business; one feature of which is to issue a journal, "The Stomatologist," in the interest of those Alumni who have any honest sentiment for their Alma Mater.

Yours truly, F. D. GARDINER, D.D.S.,

Chairman of the Executive Committee of the Alumni Society of the Philadelphia Dental College.

NEW YORK LETTER.

NEW YORK, May 19, 1897.

To the Editor of the Digest,

MR. EDITOR:—Dr. Shumway, of Plymouth, Mass., made a very novel operation before the Dwinnelle clinic in April—"Tin and Gold"—but not as we have heretofore seen it combined. He first placed the tin in the cavity, pieces about three-eighths of an inch in length cut from a hard twisted rope, filling the cavity nearly full, and then polished the surface with an ivory instrument, never using a steel one, as it would destroy the "adaptability," as he expressed it. On this polished surface he delicately placed single layers of No. 3 gold, annealed, with the ivory instrument, and this readily adapted itself to the tin, so that it could not be detached, as the demonstrator proved. He then finished with cuttle-fish discs and fine powder, making a good filling, not so hard as a malletted one, but suited for all practical purposes on buccal and labial surfaces. He did not use a steel burnisher on the final surface, as that would so harden it that it would flake. This operation is very artistically and delicately made, or, as Dr. S. G. Perry remarks, "It is desirable, considering how much labor is saved by the operator and comfort gained by the patient." Dr. Shumway introduced this novel method of combining tin and gold, believing the principle to be valuable. He is now on record; time will tell more of its virtues. He also read a paper at the evening session of the Odontological Society, "A Night with a Doctor," very suggestive and entertaining.

Mr. Clark, of Boston, gave a very intelligent talk regarding the features desired in the rheostat, showing in this connection an invention of his own conceded by electricians to be ideal in its perfection.

Dr. Woodward exhibited a new device in a cervical clamp. Dr. Shumway, we noticed, used an excellent clamp that served a very practical purpose, being readily placed in position, firmly fixed, and securing a liberal space for operation. It was announced at this session of the Odontological that Dr. J. Leon Williams, of London, has been made an honorary member of the society.

The sudden demise of Dr. Frank Abbott has been a decided surprise. Not many were aware that he had had serious organic trouble with his heart for some time, which might terminate fatally at any moment. The attendance at his funeral was not very large, not many of those he had been associated with for the last thirty years being present. We naturally thought, as he had held the office of dean of the New York College of Dentistry for so many years, that there would have been a delegation sent to the funeral, but there was none. The Odontological Society laid a beautiful offering of flowers upon his casket. Dr. Abbott has left, doubtless, a large and lucrative practice which must necessarily be scattered, for no one could gather it up even under the most favorable circumstances.

Such things can be done in Europe, for the customs are widely different. This would be an advantage were it so in this country, so far as the financial aspect is considered. It has often been a matter for discussion here in New York whether one did not owe it to his clientage to have an associate, so that the practice might be transferred into skillful hands and the people not be left to the mercy of everybody. It has been argued that one does owe something to those that have trusted them after many years. It is said that a practice in New York is not so stable as in former years. The effect of advertising places, which are increasing, is being felt to no little extent. We cannot disguise the fact that the public will and do make choice of their dentists from a variety of motives, and we do not see any way of bringing about a change. We believe it is a good trait to be so skillful that one comes to feel he does not wish to exchange with anyone. Dr. Atkinson was wont to say that, "Everyone should have the desire to be the best dentist living." There is no danger in such an ambition. We met a man on Broadway only a few days since who might well feel that he has approached that ideal. We do not know of anyone who has been more diligent in producing skillful results, both for his patients and his profession, than Dr. Corydon Palmer. We told him it did us good to see him, for he looked good for another decade. He was one of our earliest acquaintances among the Atkinson coterie in 1862; few are left. It seemed strange to find at the banquet given Dr. Williams during his visit to New York that we were the oldest one out of twenty present; Dr. Northrup the next oldest.

The April number of the *British Journal of Dental Science*, for the first period, gives an emphatic illustration of how "doctors disagree;" in the articles on Copper Amalgam, what an amount of printer's ink. And in the same journal, for the second period, they feel a little provoked if an American succeeds in their country, which is quite natural.

But dentistry comes into usefulness in many ways—note the recognition of a titled lady, one of the unfortunates of the terrible tragedy in Paris, by her dentist, who made her identity sure by the teeth. These things help to wipe the former stigma of "Nothing but a dentist" out. We think this remark was coined in France.

Dr. Bogue is on crutches, recovering from a surgical operation for the removal of tumor of very serious nature. His friends will all hope for a speedy and final recovery.

We think Dr. Catching's article on consolidation of societies in the May *International* is so much to the point that it will be *Catching*.

We learn by a letter from an acquaintance in Tien Tsin that since Li Hung Chang was in this country three American dentists have settled in that city. This is the palace residence of that man of the peacock feathers and there is a boom of modern improvements going on, together with American-built railroads. If we were young in years we would look that way for a prospect.

The latest dodge in New York is aluminum-lined plates of rubber. It is painted on like bronze paint and looks fairly well, but lasts only long enough to sell the plate. These advertising fakirs get $20 for these frauds.

The state society has had its yearly session, and selected Dr. Burkhart, of Batavia, for president. The city societies are off until autumn. Cordially, NEW YORK.

PHILADELPHIA LETTER.

PHILADELPHIA, May 17, 1897.

To the Editor of the Digest,

DEAR EDITOR:—The first time a man sees his name in a paper he buys it and wonders why anyone would think of taking any other paper. If by chance he should contribute an article, and the editor, being a little short of material, should insert it in the next issue, the author would be of the opinion that extra copies should be sent out for the diffusion of knowledge.

Commencement days in this city are in full blast, or rather were a short time ago, that is, in the dental line. There are three schools here, with an estimated attendance of 1,100, from which number about 350 are sent out as full-fledged stomatologists. If they were turned out as dentists their next step would be to attend some post-graduate school and learn how to construct an artificial denture. Still with this number Philadelphia is not content, and she has organized a fourth school, the dental department of the Medico-Chirurgical College.

Referring to Commencement week, it is also a week of dinners in great variety. The number present varies from five to one hundred, and all kinds of speeches are delivered. Swelled heads come from these speeches, but more come from the flow of good fellowship, and all such gatherings end with the declaration—"We will meet again."

A few Philadelphia dentists are following the lead of their Chicago brethren by having their offices in office buildings. There are fifteen of them in different buildings at the present time. The first one to make this move was Dr. F. L. Bassett, who started five years ago. Personally and professionally anyone who follows him will not go astray.

At the annual meeting of the Odontological Society of Pennsylvania Dr. A. P. Brubaker was elected president. The placing of a medical man at the head of a dental society is quite an innovation on past customs. Dr. Brubaker's ability as a presiding officer and his tact in arranging committees, together with his personal popularity, should produce excellent results for the coming year.

The *Dental Cosmos* in a recent editorial has offered to the profession its apology for neglect of duty, by saying: "We were not favored with a copy of the report for publication in this journal, which may in some degree explain the absence of comment upon it on the basis that but a minority of the profession have read it. Certainly it is not lacking in features interesting and important enough to arouse the attention of the most apathetic."

While the editor may not have received a copy direct, he evinces that he knows well where it was published—in the DIGEST—and that he has seen it, as he seems to appreciate its value and sarcastically regrets "that but a minority of the profession has seen it." The truth of this last statement might be questioned. Why has he not acted in the premises before?

This position is the more peculiar in the light of the fact that his journal has exclusive control of reporting the proceedings of another association, and for ten months has failed to give to the profession the details of that meeting in which he himself took part, the import of which is of such vital importance to all who hold the fair name of the profession dear to the heart, and yet the *Dental Cosmos* is "devoted to the interests of the profession." QUAKER.

RESTORATION OF HARDENED RUBBER.—Any rubber goods which have become hardened by age may be restored to almost the original softness by soaking for a short time in ammonia diluted with twice its bulk of water. This will not injure the rubber.—*Dr. Fowling, Albia, Iowa.*

GOOD INVESTMENT.—Dr. Ross, professor in Vanderbilt Dental College, said on one occasion that what he regarded as the best investment he ever made in his life was, when a boy, he gave a quack dentist $5 for three lessons instructing him how to use the brush, quill pick and cobbler's thread, now superseded by dental floss.—*J. S. Spurgeon, in Dental Headlight.*

The Dental Digest.

PUBLISHED THE

TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

"OUR NATIONAL BEGGAR ON HORSEBACK"

This is the title of a rather long editorial in the May number of the *Dental Cosmos*, in which the organization of the National Association of Dental Examiners, and new rules, as adopted at the meeting last August, and published in the December, 1896, number of the DIGEST are analyzed and criticised.

The article is too long to be discussed here in detail, but it is a vigorous and sarcastic attack on the requirements, prescribed by the association, of dental colleges for recognition, questioning its right to make rules and enforce requirements for the standard of the colleges, claiming that, "The function of the dental examining board of a state is therefore purely and exclusively executive. The most liberal construction of its purpose and its powers can never invest it with an educational function;" also discussing the legal aspect of the question which involves the law of state rights.

We are under the impression that there are some court decisions which give the stamp of authority to the National Association of Dental Examiners, and so have come to consider this organization as vested with power. However, we do not feel quite sure that we are right in this belief, but we are positive that state laws prescribing requirements in order to practice dentistry and medicine have been sustained by our courts. If all the states had uniform laws, which stated just what education and training must be had before entering upon practice, graduates from such colleges as refused to comply with these requirements would be at a decided disadvantage. In which case the stamp of reputability by the National Association of Dental Examiners must be of importance.

The National Association of Dental Examiners and the National Association of College Faculties are both of the greatest importance to the dentists. The dental profession has never accomplished what it should because of the lack of harmony and co-operation, but as regards educational matters, as shown by the past work of these two organizations, it is in advance of other professions. It would seem as though two such important bodies as these should be able to work together harmoniously, and we should regret to see anything arise which tended in any way to disrupt the friendly relations existing between them.

We believe the laity of the profession will watch with unusual interest to see how other college men will regard the rules adopted by the National Association of Dental Examiners. Certainly the editor of the *Cosmos*, who is also the dean of a dental college, has spoken his mind forcibly and with more than usual feeling. We call special attention to his editorial, fearing that only a minority of the profession might see it and study the situation.

THE MEETINGS THIS MONTH.

We much regret that we were unable to attend the annual meeting of the Illinois State Dental Society, but the needs of the Protective Association called us away just at that time. We were very glad to learn that the society had the most successful meeting it has held for years. The attendance was very large, about forty new men joined the society, the papers were most excellent and great interest was manifested in the discussions. All who were present report that they were greatly benefited by attending and that they feel new life has been infused into the society. We are pleased to record the fact that the society appropriated $300 for the Protective Association, and that several new members were obtained.

At the same time we were doing our best at the joint meeting at Old Point Comfort, and besides getting many new members, we became acquainted with and interested those at this meeting, so that greater activity for the cause will surely result. The societies which met there were the Maryland State, Virginia State and Washington (D. C.) City, and although the attendance was not overly large, the interest was great and the meetings very attractive. The program was long and had rather more important questions to discuss than could be well considered in a three days' meeting. Besides having the pleasure of becoming acquainted with the profession in that section, we completed the arrangements for the American Dental Association, which meets the first Tuesday in August, and will give full details in our next issue.

The meeting of the New York State Society at Albany we have discussed in another editorial, but would say in passing that the meeting was large, great interest was shown, new members were obtained and added interest in the Association aroused.

PLAGIARISM AND CONSISTENCY.

In an editorial on plagiarism in the November, 1896, number of the *Dental Cosmos*, written because an author seemed to have taken some ideas from a former number of that journal, is the following—"The piratical journal is sufficiently contemptible, and the individual plagiarist is none the less so. They belong in the same category, but the crime in a journalistic sense has been somehow regarded as less heinous than when perpetrated by an individual, for what reason is not clear, except it be that the individuality of a journal is not so manifest as that of an author or a writer."

In the December, 1896, number of the DIGEST, illustrated by a cut, appeared the following article on "Festooned Gums," by Dr. M. L. Fay, of Buffalo:

> The accompanying cut illustrates a very simple and easy, yet effective mode of making a carved or festooned gum or an artificial denture, without the tedious carving by hand which involves considerable time and patience. The method of procedure is as follows: Arrange the teeth and wax up the case as desired, but leave the necks a little exposed, and with a closely-woven cotton string, which has been drawn through melted wax and allowed to cool, festoon the necks of the teeth as shown in cut, pressing the string between them with any instrument suitable for the purpose. Then with a warm spatula unite the string to the wax and smooth up the case with a mouth blow-pipe, which will draw the wax up on the string and give pleasing results. Invest and pack the case, removing the string with the wax.
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> When ready to finish, trim up with a sharp instrument the thin margins of rubber overlapping the teeth and polish with pumice and a stiff brush-wheel. This will reduce the prominence of the festoon and make it very lifelike. Do not polish the pink rubber with the fine wheel, as the effect is much better when left dull.

In the February, 1897, number of the *Dental Cosmos* we find the following:

> Dr. Richard Kessell, of Buffalo, addressed the convention on the subject of "Unbreakable Vulcanite Dentures, and Other Novelties of Mechanical Dentistry." He submitted for inspection an artificial set of plain teeth to illustrate his plan of festooning the gums without carving them, which is as follows: After the teeth are set up and waxed in the usual manner, a thin, tightly-wound string is first run through hot wax, then laid around the necks of the teeth, following the curve of the gums at the gingival festoons; the string is smoothed and leveled down to the height of the wax plate, and the wax polished, with the string in position, using a soft brush and chalk. The case is now ready for investment.
>
> After it has been vulcanized, the pink, rubber-festooned gums are polished with hard brush and pumice, then with soft brush and chalk, making a beautiful looking set, both in and out of the mouth.

Let us quote again from the editorial in the *Cosmos* above referred to: "A comparison of these essays will be found interesting. Even a superficial inspection will show that the one of recent publication is almost a verbatim transcription of the original, which was first published in this journal. An entire absence of quotation marks or of a line of credit for the ideas appropriated is noticeable. This absence of quotation marks is possibly an oversight upon the part of the writer, or possibly a printer's error. In either event it is a piece of stupidity which should have been corrected in a later issue."

It does not seem necessary for the DIGEST to add anything to the case the *Cosmos* has made against itself. It is on record as opposing the stealing of matter from its columns; now let it attempt to justify its own pilferings, unless the editor considers that the ethics governing ordinary mortals do not apply to him.

MEETING OF THE NEW YORK STATE SOCIETY.

On our trip we attended this meeting. There was a great deal to interest, as is always the case with this society, but we cannot here give much in detail. We wish, however, to comment on two things in connection with this society and this particular meeting. First, the organization; the state of New York has an excellent method of banding the profession together. The state is divided into sections or districts and these branches go to make up the state society. So far as we could see the plan is working admirably, and other states would do well to study and pattern after this idea. No doubt any officer of another society can get a copy of the by-laws and examine the plan of organization.

The other feature of this meeting concerning which we wish to speak was the practical demonstrations given by Dr. Black on the character and manipulation of amalgam. He had arranged to have the members come the day before the meeting and bring with them samples of the amalgam they used in their daily practice. They then filled cavities in steel tubes with it, took the measurement of the fillings with a micrometer and examined them with a microscope, and the next day took measurements again, which gave the amount of shrinkage and showed the defects in the amalgam as well as in the manipulation.

There are two good results that come from such clinics: First, the members soon learn which are the better preparations on the market, and also discover the difficulties of manipulation, as the microscope shows very readily the defects of manipulation and in such a way as we cannot have illustrated in the mouth. We have been working along this line for many months and feel sure that the micrometer test, as well as an instrument to test the strength under pressure, is bound to give good results in the use of amalgam as a filling material.

Book Reviews.

NOTES ON THE HISTORY OF ANESTHESIA. THE WELLS MEMORIAL CELEBRATION AT HARTFORD, 1894. EARLY RECORD OF DENTISTS IN CONNECTICUT.—By James McManus, D.D.S. Printed for the Author by Clark & Smith, Hartford, Conn., U.S.A., 1896.

The writing of history is generally a labor of love, and often love unrequited. Certainly in the present instance these interesting historical notes have been prepared by one whose devotion to the subject has always been intense, and the spirit of that devotion is manifested throughout the book. Dental history, that which records the birth and development of our specialty, must necessarily be made up of or based upon the collected gleanings which qualified individuals have made, each within his scope of observation. The contribution which Dr. McManus has made to the volume before us is one of first value. It deals with one of the most important, yes, the most important contribution which our profession has given to humanity—and it is well done. The author has well earned the gratitude of the whole dental profession for his interesting and able presentment of it.—*Cosmos.*

Notices.

COLORADO STATE DENTAL ASSOCIATION.

The regular annual meeting of the Colorado State Dental Association will be held June 8-10, 1897, at Colorado Springs. The special feature of this meeting will be the demonstration by clinics of the various dental subjects under discussion. J. S. JACKSON, Sec'y Ass'n, 1515 Stout St., Denver, Colo.

MISSOURI STATE DENTAL ASSOCIATION.

The thirty-third annual meeting of the Missouri State Dental Association will be held at Pertle Springs, Mo., July 6-9, 1897. We expect a large attendance both from within and without the state. The surroundings will be pleasant and the meeting profitable.

F. M. **Fulkerson**, Cor. Sec'y, Sedalia.

DENTAL DEPARTMENT, UNIVERSITY OF BUFFALO.

The Dental Department of the University of Buffalo held its fifth annual commencement exercises, in connection with the Departments of Medicine and Pharmacy, in Music Hall, Buffalo, the evening of April 27, 1897. The whole number of students matriculated for the term was 222. The seniors numbered 70, juniors 70, and freshmen 82.

TENNESSEE STATE DENTAL ASSOCIATION.

The meeting of the Tennessee State Dental Association has been changed from Lookout Mountain to Nashville, and will be held July 6–8, and the 9th to be devoted to attending the Exposition. All dentists in good repute are cordially invited to meet with us.

U. D. **Billmeyer**, Pres.
D. B. **Brabson**, Sec'y.

MASSACHUSETTS DENTAL SOCIETY.

The thirty-third annual meeting of the Massachusetts Dental Society will be held in Harvard Dental School Building, foot of North Grove street, Boston, Wednesday and Thursday, June 2 and 3, 1897. Board of councillors meet at 9:30 a. m., Wednesday. Meeting of society 2 p. m., Wednesday. A good meeting is promised. Please mark off the dates now, and be sure to attend.

Edgar O. Kinsman, Sec'y, Cambridge.

NEW JERSEY STATE DENTAL EXAMINATIONS.

The Dental Examining Board of New Jersey will meet at the Commission rooms, 88 Broad street, Elizabeth, N. J., on Tuesday, July 13, 1897, for the examination of candidates for license to practice dentistry. All applications for examination must be in the hands of the secretary on or before June 30. Blanks and instructions sent on application to the secretary.

G. **Carleton Brown**, Sec'y, 88 Broad street, Elizabeth, N. J.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-third annual meeting of the Illinois State Dental Society was held at Peoria, May 11 to 14, 1897. The following officers were elected for the ensuing year: President, J. A. W. Davis, Galesburg; Vice-President, W. A. Johnston, Peoria; Secretary, A. H. Peck, Chicago; Treasurer, E. D. Swain, Chicago; Librarian, Grafton Munroe, Springfield. The next annual meeting will be held at Springfield, May 10, 1898. A. H. **Peck**, Sec'y.

INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association will hold its thirty-ninth annual meeting in Fort Wayne, commencing at 10 a. m., June 29, 1897, and continuing through three days. Members of the profession are cordially invited to be present and to participate in the proceedings.

The State Board of Dental Examiners will meet in the New Aveline Hotel, Monday, June 28, at 2 p. m., to examine all applicants for license.

M. A. **Mason**, Sec'y.

COLORADO'S NEW DENTAL LAW.

The governor has signed a bill enacted by the last General Assembly to regulate the practice of dentistry in the State of Colorado.

The main features of the bill are—that the Board of Dental Examiners shall consist of five (5) members, three of whom shall be recommended by the State Dental Association. No temporary licenses are to be issued. All applicants for a license shall be examined by the Board of Dental Examiners. No one shall receive a license or be eligible for an examination who does not, as a prerequisite for such examination, possess a diploma from some reputable dental college. J. S. JACKSON, Cor. Sec'y, Colo. State Dental Ass'n.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

On May 25, 1897, Governor Tanner sent to the senate the following nominations: Members State Board Dental Examiners—J. L. Bingham, of Chicago, to succeed A. W. Harlan, resigned; J. H. Smyser, of Chicago, to succeed L. L. Davis, resigned; Homer W. Pitner, of Fairfield, to succeed L. Irons, term expired; A. C. Barr, of Alton, to succeed G. A. McMillen, term expired; W. C. Jocelyn, of Cairo, to succeed J. W. Wassall.

RESOLUTION PASSED BY CHICAGO DENTAL SOCIETY.

At a meeting of the Chicago Dental Society, held on May 4, 1897, the following resolution was offered by Dr. Truman W. Brophy, and unanimously carried:

Whereas, the dental colleges and state dental boards of the United States have been charged by dental societies of Europe with methods which are not only degrading to American dentistry, but result in a positive injury to the people, and are especially humiliating to skillful American dentists practicing abroad;

It is charged, and truly, that foreigners unable to speak and understand the English language and in many instances possessing limited or no knowledge of dentistry, have been admitted to advanced classes of our colleges and permitted to graduate;

Moreover, that our state boards have also examined such candidates through interpreters, and after receiving their certificates, these foreigners have returned to Europe and announced themselves as American dentists.

Resolved, It is the sense of the Chicago Dental Society that all candidates for admission to our colleges be examined in the English language; also that our state dental boards conduct their examinations in English.

A. H. PECK, President,
Chicago, May 26, 1897. GEO. B. PERRY, Cor. Secretary.

RESOLUTION PASSED BY ODONTOGRAPHIC SOCIETY OF CHICAGO.

At the meeting of the Odontographic Society of Chicago, held on May 10, 1897, the following resolution was offered by Dr. Frank H. Zinn, and unanimously carried:

Whereas, the dental colleges and state dental boards of the United States have been charged by dental societies of Europe with methods which are not only degrading to American dentistry, but result in a positive injury to the people, and are especially humiliating to skillful American dentists practicing abroad;

It is charged, and truly, that foreigners unable to speak and understand the English language and in many instances possessing limited or no knowledge of dentistry, have been admitted to advanced classes of our colleges and permitted to graduate;

Moreover, that our state boards have also examined such candidates through interpreters, and after receiving their certificates, these foreigners have returned to Europe and announced themselves as American dentists.

Resolved, It is the sense of the Odontographic Society of Chicago that all candidates for admission to our colleges be examined in the English language; also that our state dental boards conduct their examinations in English.

GEO. B. PERRY, President.
Chicago, May 26, 1897. H. H. WILSON, Secretary.

LIST OF LATEST DENTAL PATENTS.

581,335.	Cassius M. Carr, Eureka, Utah. Dental Bridge-Work.
581,407.	George N. Oldham, St. Louis. Sterilizer for Dentists' Instruments.
581,670.	Basil M. Wilkerson, Baltimore, Md. Dental Chair.
581,986.	Aaron P. Gould, Canton, O. Dental Chair.
582,045.	Wm. S. Depew, Jamestown, N. Y. Dental Plate.
582,046.	Wm. S. Depew, Jamestown, N. Y. Metal Paint for Dental Rubber.
582,213.	Edward B. Lodge, Cleveland, O. Dental Matrix.
582,342.	Edward L. Chaffin, Helena, Ark. Traveling Artificial Dentures.

MILWAUKEE ODONTOLOGICAL SOCIETY.

This society held its first regular monthly meeting April 6, 1897. Dr. A. Holbrook read a paper on cataphoresis. Those who attended were Drs. Holbrook, R. G. Richter, W. C. Wendell, W. H Carson, C. H. Richter, C. L. Babcock, L. R. Esau, E. A. Geilfuss, A. T. Holbrook, L. J. Stephen, J. T. Stuart and H. B. Wiborg. The society is organized for purposes of scientific investigation of subjects in medicine, dentistry and collateral sciences. Meetings are to be held once a month and will be preceded by a dinner, after which papers will be read and discussed. The membership is limited to fifteen. The officers are: President, Dr. Arthur Holbrook; Vice-President, Dr. R. G. Richter; Secretary and Treasurer, Dr. H. B. Wiborg; Curator and Librarian, Dr. J. S. Batchelor: Board of Censors, Drs. W. C. Wendell, W. H. Carson and E. A. Geilfuss.

PACIFIC COAST DENTAL CONGRESS.

In accordance with resolutions adopted at the Midwinter Fair Dental Congress, another such congress will be held in San Francisco, beginning Tuesday, Aug. 17, 1897, and continuing four days.

The management of the congress is vested in a general committee, consisting of representatives from the Midwinter Fair Dental Congress, and from all other dental organizations on the coast. This general committee has organized and appointed various sub-committees, so that each part of the work will be in the hands of worthy and energetic men.

The president of each dental organization entitled to representation will be an honorary vice-president of the congress. Each dental society of not less than ten members adopting the code of ethics of the American Dental Association, each recognized dental college faculty, and each board of dental examiners on the coast may elect one member for the general committee for each twenty members of said society, or fraction thereof. Dental societies, faculties or state boards not yet represented on this committee will please send names of delegates to the secretary, so that representation may be as complete as possible.

Membership. Any legal or reputable dentist within the jurisdiction of the congress, upon approval of the membership committee, may become an active member of the congress. The membership fee will be five dollars, payable at the opening of the congress. Application blanks will be furnished by the chairman of the membership committee.

Members of the profession wishing to present papers or give clinics will please communicate with the chairman of the program or clinic committee. All papers or duplicates must be in the hands of the program committee at least two weeks before the opening of the congress, so that those appointed to open discussions may have an opportunity to prepare for the same.

The transportation committee expects to make arrangements with railroad and steamship lines for reduced rates.

It is hoped that this will be a larger meeting than ever held on the coast, that every dentist here will be present, and that many will be attracted from the east. A cordial invitation is extended to all honorable members of the profession to take part in this congress. Let every man urge his neighbor to come and make it a grand success.

For the General Committee.

C. L. GODDARD, Chairman.
406 Sutter St., S. F.

R. W. MEEK, Secretary.
1169 Bdw'y, Oakland.

News Summary.

As we go to press we learn that Dr. L. C. Ingersoll, of Keokuk, Iowa, is dead.

DROWNED IN THE RAPIDS.—Dr. John Gentles, a prominent dentist of Montreal, Can., was drowned May 24 in the Cedar rapids of the Rouge river while on a fishing expedition.

AN ATTRACTIVE FEATURE of the meeting at Peoria was the new drink—"Kola Cardinette" with an egg in it—introduced by Mr. Stephen Hexter, the agent for Borolyptol. In fact, it proved so attractive that on two mornings he was roused at 6 a. m. by calls for it.

FAILURE OF ROCHESTER DENTAL MFG. CO.—A receiver was appointed May 8 for the Rochester Dental Manufacturing Co., located at Rochester, N. Y. The capital stock was $30,000; obligations, $10,000. This company also published the Odontographic Dental Journal.

SYPHILITIC SORES DUE TO DENTISTS.—In the *Buffalo Medical Journal* for April, Dr. A. E. Diehl says that a very large percentage of cephalic syphilitic sores occur on persons who are innocent, and that those on the gums are generally due to unclean instruments employed by dentists.

QUEER, ISN'T IT?—It seems strange, after all that has been said lately about not giving proper credit for articles taken from other journals, that one of the oldest dental journals in the country, the *Dental Register*, should be guilty of this practice. In the May, 1896, number of the *Register* appears an article on "Removal of Deposits upon Teeth," by Dr. I. A. Freeman, of Chicago. This article, and the discussion as taken down by the DIGEST'S reporter, is copied from the March, 1896, number of the DIGEST, yet not a word of credit is given to this journal. Such a lack of editorial courtesy is deplorable.

TO PREVENT THE CLOUDING OF LARYNGOSCOPES.—An ingenious device to prevent the clouding of dental mirrors, which is, of course, equally applicable to the mirrors used in nose and throat work, has been made known by an English dentist, Mr. George Wallis. This consists simply in smearing the surface of the mirror with soap and then polishing it with a dry cloth. If this is done, the troublesome warming of the laryngoscope over a lamp is entirely unnecessary. This method has long been used by housewives for polishing mirrors, but we do not know of it ever having been employed by laryngologists.—*Medical Record.*

TO RETARD THE SETTING OF PLASTER OF PARIS.—When, for some reason in making plaster casts or bandages it becomes desirable to retard the setting of the plaster magma, this may be accomplished by adding to the water powdered althæa root in the proportion of 2 to 4 per cent. When dry, such casts may be sawed, filed and turned. An addition of 8 per cent of althæa retards setting for a full hour, and the mass may be kneaded, rolled and otherwise shaped. The addition of a very little alum or ferric chlorid produces a very bad cast. Good plaster should not set in less than three minutes.—*Western Druggist.*

EXECUTION BY GAS.—Some time ago the Allegheny County (Pa.) Medical Society appointed a committee to make an exhaustive investigation of the present methods of executing condemned criminals, and to recommend a substitute for hanging or killing by electricity. The committee has now concluded its investigations, and will recommend that gas be substituted for the rope and electric chair. It is claimed that condemned prisoners could be put to death by this agent painlessly during sleep. It is proposed that the society draft a bill for presentation to the Pennsylvania legislature this winter providing for the change.—*Medical Record.*

WILL BENEFIT DENTISTS.—The liability of employers for damages to workmen injured while in their employ is likely to benefit dentists. The exposure of a tooth in which there is the slightest decay of the enamel to the fumes of phosphorus means the death of the tooth. Not long since an employe of a match company lost his teeth, then died; and his widow received a large sum from the company. Immediately another match company called in a dentist to inspect the teeth of its employes. It was found that out of 200 young women 60 had defective teeth, and the company ordered them to a dentist, or to go out of the company's employ.—*National Recorder.*

CIGARETTES.—An analysis at the Department of Agriculture showed: Ash 13.00, water 13.00, ammonia .05, nicotin 1.20, oils and fats 5.00, fiber 6.00, sugar starch 50.00, pretreate matter 12.50. No opium or arsenic was found after analyzing samples of all the common native brands. The opponents should confine their charges to the injurious effect of the nicotin upon the nervous system and upon the heart. It disturbs the regular systole and diastole of the heart and changes the beat to a muffled flutter. After the cerebral exhilaration and exaltation produced by smoking, come with the lapse of hours irritating, debilitating or soporific effects, which give way under exhilaration of another smoke, but persist unpleasantly unless treatment is granted. A body subject to such alternations cannot stand during twenty-five years what it could have if freed from them.—*Amer. Micros. Jour.*

INFILTRATION ANESTHESIA.—The fluid consists of a very dilute solution of cocain and morphin, with a small portion of chlorid of sodium. The needle of the syringe is introduced at a point in the area which it is desired to render anesthetic, and keeping it parallel with the surface is pushed on until the eye is hidden. A few drops of the fluid are then injected, and a wheal is instantly produced which is anesthetic. The needle point is then withdrawn and reinserted within the wheal in the line of the proposed incision, and the process continued until the whole area that it is desired to anesthetize has been rendered insensitive. If the operation be a simple skin incision, as the opening of an abscess, this is all that is necessary; but if a small tumor is to be removed it will be necessary to infiltrate the tissues under the skin after this has been incised. In minor operations it is very successful. Its safety is beyond question.—*Fife.*

INVENTOR OF RUBBER PLATES.—William Willshire Riley, who died April 8, near Middletown, Conn., aged 81 years, was often spoken of as the inventor of india-rubber plates for artificial teeth. United States patent No. 8,533 was granted to him on November 18, 1851, for "attaching porcelain teeth to gum plates," and his invention came into such general use as to yield a liberal income from royalties. Mr. Riley obtained patents for several other inventions, not related to rubber, which also proved successful and profitable. The deceased was the son of James Riley, who, born on a farm near Middletown, became a famous sailing master. The most notable adventure of the latter is recorded in a bulky volume published in London in 1817, under the title:

"Loss of the American Brig 'Commerce,' wrecked on the Western Coast of Africa in the month of August, 1815; together with an Account of Timbuctoo, and of the Hitherto Undiscovered Country of Wassanah." By James Riley, late Captain and Supercargo.—*India-Rubber World.*

SALIVA A MICROBE KILLER.—It has long been known that secretions of the mucous membrane, especially saliva, possess antiseptic properties under certain circumstances, which explains the reason why the germs which enter daily and hourly through the mouth do not reach a harmful development, but Edinger has now found the active material in potassium rhodanate, which is present in saliva. Potassium rhodanate is a compound of sulfur, cyanogen and potassium, and is, in large quantities, narcotically poisonous to warm blooded animals; it is, like other rhodanates, fatal to bacilli. It is said that quinolin rhodanate, in a solution of three parts to the thousand, will kill the cholera bacillus in a minute, and in a solution of three times this strength, will kill the diphtheria bacillus in the same time. It was found by further researches that this rhodanate has the effect of carbolic acid and of corrosive sublimate, and at the same time is harmless to man.

Rhodanate is the same thing as sulpho-cyanate, a much better word because it explains itself, and is not liable to be confounded with the derivatives of rhodium.—*Popular Science News.*

IRRUPTION OF TEETH INTO THE NOSE.—In the *New York Medical Journal* for December 26 Dr. Alexander McCoy publishes a series of cases illustrating the irruption of the teeth into the nasal cavities. This painful and fortunately rare condition, he observes, is attributable, as a rule, either to abnormal development with rotation of the dental germ—the enamel growing upward instead of downward—or to extra-follicular development. A case originating in traumatic displacement of the normally irrupted tooth is also recorded. As a rule, the floor of the nasal passage is the seat of the invasion, the enameled crown presenting, though extra-follicular irruption at a higher point is also recorded. As might be expected, the offender is usually a front tooth, incisor or cuspid, but others as far back as the third molar have been found thus displaced. The clinical interest attaching to cases of this kind is largely that of secondary disturbances which comprise local necrosis, with suppuration consequent on the boring action of a hard body traveling through previously-formed bone, otitis, and even laryngeal spasm. The journey performed by such erratic teeth is often not short or rapid. In one case, as read by the light of symptoms, a third molar appears to have made its way during a period of thirty years through the alveolus into antrum of Highmore, and thence by ulcerative inflammation through the lateral nasal wall and inferior turbinated bone on to the nasal floor, whence it was ejected.

TESTS OF CREDE'S SILVER GAUZE AND SALTS AS ANTISEPTICS.—The *Cbl. f. Chir.* of January 23 contains the reports of three scientists who have been experimenting with silver to determine its value in antisepsis. The results fail to confirm Crede's experiences. Zajontschowsky states that the gauze is not sterile; that it does prevent the development of bacteria to a limited extent, but is not bactericidal at all, and that much of the effect Crede ascribes to it is due to the absorptive power of the gauze, whether impregnated with silver or not. Iodoform gauze kept in sublimate solution, 1 to 2,000, as is used in his service, is more effective than the silver gauze. Meyer of Zurich also states that in his numerous and careful tests the staph. pyog. aur. were destroyed in an itrol solution (1 to 4,000) only after forty-five minutes, and in an actol solution (1 to 2,000) after thirty minutes. Albumin in the silver salt solution retards the bactericidal effect. Anthrax spores were still growing after five to seven days in a saturated itrol solution and after three days in an actol solution (1 to 1,000). Silver salts added to the bouillon prevented the development of staph. and pyocy., but anthrax spores continued to grow in serum to which actol had been added (1 to 10,000). In regard to their effect in preventing the development of bacteria in albuminous media, silver salts approach very closely to sublimate, but in aqueous solutions sublimate is a far more powerful antiseptic than the former. Other tests by Brunner show that the effect of the silver is more decided and rapid as the bacteria are less virulent.

Obituary.

DR. JOHN C. STOREY.

Died on Wednesday, March 17, 1897, at 11:30 p. m., John C. Storey, M.D., D.D.S., aged 61.

It is with great sorrow that we announce to the readers of the *Journal* the death of our much beloved brother, Dr. John C. Storey, editor of the *Texas Dental Journal*, who was sincerely admired and reverenced by the profession in the State and entire South. He was a man of sterling worth, possessed of a tender, kindly heart, a fine mind well stored with useful knowledge, which had ever been freely given to the profession for its use and elevation. His gifted mind has been recognized throughout the United States and his writings read with great benefit to all. He loved his profession and all who were connected with it who followed it legitimately, disliking the "quack" as bitterly as he loved the true and honest.

Dr. Storey was born in Green county, Alabama, in 1836, and his father, Dr. John C. Storey, was one of the pioneers of that State. He was graduated from the Atlanta Medical College in 1857, and practiced his profession in Green county from 1857 to 1860, and then removed to Louisiana. At the beginning of the war he enlisted in the Nineteenth Louisiana infantry, and in 1862 was discharged on account of ill-health. He afterwards re-enlisted as assistant surgeon, and from this time to the close of the war he was busily engaged in caring for the sick and wounded. At the close of the war he married Miss Wiley, daughter of Rev. Dr. E. E. Wiley, of Emery, Va. Four children were born of this union—John E., Clarence L., Virginia E., and Theodore J. Mrs. Storey died June 27, 1891, and her remains were interred in Trinity Cemetery. In 1867 Dr. Storey entered the Baltimore College of Dental Surgery and was graduated in 1869. In 1875 he came to Dallas and has resided here continuously since that time. He was a member of the Southern Dental Association and of the Texas Dental Association, and had served as president of each of these organizations. Dr. Storey was a member of the Presbyterian Church, having joined that denomination almost thirty years ago. He was also a member of Camp Sterling Price, United Confederate Veterans.

The funeral services were conducted by his pastor, the Rev. Dr. W. M. Anderson, in the First Presbyterian Church, at 11 o'clock Saturday morning, March 20. The church was filled with friends and relatives. The many tributes of love and respect paid to the man by his pastor found response in the hearts of his loving friends there assembled to pay their last respects to him with whom they had worshipped so many years, as members of the same body. The floral emblems were many and beautiful. The interment was at Greenwood (Trinity) Cemetery, where he was laid by the side of the wife of his youth who preceded him to the land beyond five years ago. The obsequies were in charge of Camp Sterling Price, the members of which attended in a body to do honor to their dead comrade. Judge E. G. Bower and Rev. W. L. Lowrance conducted the burial ceremony.

The pallbearers were: Drs. Thruston and Lane of the Dallas Medical Association, Drs. Westerfield and Fife of the Texas Dental Association, and John J. Conroy and Major Wortham of Camp Sterling Price.

Dallas, Texas. T. L. WESTERFIELD.

The Dental Digest.

Vol. III. CHICAGO, JUNE, 1897. No. 6.

Original Contributions.

COCAIN ANESTHESIA.

By R. J. Coultas. M.D., Mattoon, Ill. Read Before Eastern Illinois Dental Society, March 16, 1897.

Surgeons have always been interested in remedies which partially or totally relieve pain incident upon operations. The great advance along this line was the introduction of ether and chloroform. Previous to this rapidity and dexterity in operation were the means used to lessen suffering. However, in short operations and those where the aid of patient is desired, general anesthesia has its disadvantages. Nitrous oxid was popular some time ago, but is seldom used now, except for very short operations.

During the year 1884 Dr. Karl Koller first employed cocain as a local anesthetic in eye surgery, and since that time total anesthesia has been confined to exceptional cases. The same holds true as regards operations on the nose and throat; in fact, is true in the case of all mucous surfaces, when minor operations are to be performed. One great advantage partial anesthesia has over general is, that you have the conscious and intelligent assistance of the patient. In nasal treatment it is much more difficult to remove a spur from the septum or a hypertrophy from the posterior turbinated with the patient in a horizontal position than when sitting upright. I should judge the same would apply to dental surgery. Furthermore, cocain can be applied and anesthesia produced without giving the appearance of an operation, which is not possible in total anesthesia.

Cocain hydrochlorate comes in the form of crystals, which should be in their primitive form, clean and large; large crystals are better than small ones. Always avoid powdered cocain, as it is usually adulterated. The solution should be about 2 or 3 per cent, made with distilled or freshly boiled water, so as to keep it free from germs, which develop rapidly in a solution of cocain, rendering it inert. There is a rather prevalent custom of making the solution antiseptic with some of the stronger germicides, which is objectionable. In cases where the vitality is weak and nutrition poor, on injecting a solution of this character you will find that a sloughing of the soft tissues often follows, and if sufficiently extensive may produce necrosis. So, while the germicide has proved an escharotic, cocain receives the odium.

When cocain was first used as a local anesthetic the solution was made too strong, usually a 10 or 20 per cent one being applied topically or injected hypodermically. If a patient be unusually susceptible to the poisonous effects of the drug he is quickly in an alarming condition. On the other hand, if a 2 per cent solution be employed the symptoms of poisoning manifest themselves slowly and there is ample time to save the patient from discomfort and yourself from embarrassment. The first symptoms of acute cocain poisoning are rapid and apparently difficult breathing, perspiration, and an anxious expression of face. Should the administration be continued, numbness of extremities and weak pulse follow, and patient may become unconscious.

I advocate the topical application of cocain to the mucous membrane before injecting it into the membranous tissue, as you then are forewarned in case of any idiosyncrasy, and the pain of injection is avoided. The effect of the topical application to mucous surfaces is first a pallor and shrinking of membrane, and then a lessening of sensation. The same condition obtains when cocain is injected into the deeper tissues. The anesthesia lasts about fifteen minutes and the tissues then return to their normal condition. In some cases where a 10 to 20 per cent solution is used a reaction takes place, and if repeated frequently the mucous membrane becomes thickened and chronically inflamed. It is claimed on good authority that cocain has no anesthetic effect on sensitive dentin, but it can be used to good advantage in treating the pulp cavity.

In 1896 a new local anesthetic was discovered—eucain. Chemically, cocain and eucain are very much alike, but the latter is more stable, does not become inert with age, and can be kept in solution without deterioration. Physiologically, they differ somewhat, as eucain does not produce anemia, does not dilate the pupil or disturb the accommodation of the eye, is said not to be so poisonous, and is readily borne where cocain cannot be used. I have used eucain in nasal surgery and prefer it to cocain for removing hypertrophies from the turbinated bodies with the snare. As it does not shrink the tissues there is a larger mass to hold the wire in position. For an operation requiring more time and accompanied by hemorrhage cocain is preferable, because of its hemostatic properties. With due caution in their use, cocain and eucain are among our most useful drugs.

REMINISCENCES OF PRACTICE, A COMMENT THEREON.

BY WILLIAM H. TRUEMAN, D.D.S., PHILADELPHIA.

The leading paper in the April number of the DIGEST I have read with the keen interest it so well merits. We, the younger members of the profession, appreciate, I am sure, such scraps of history which our elder brethren are so well able to furnish. Many facts in our profession's history are found nowhere else than in recorded experiences, such as Dr. Tenison's paper is. In a few points, however, it is unwittingly misleading. The errors are such as are commonly made, due no doubt to our profession having neglected to provide such facilities as other professions have for its members becoming acquainted with its history and literature. For the benefit of those who may not have at hand the necessary data, I beg leave to suggest the following.

I take the time referred to by Dr. Tenison to be the early sixties. The large vulcanizers were supplanted by smaller ones at an early date. The Whitney, in size and shape identical with those now in use, and the Hayes oven, a very small affair, much the shape and but little larger than an ordinary vulcanizer flask, are advertised in the dental journals as early as March, 1861. The large, cumbersome ones Dr. Tenison speaks of had a very short reign and were quickly supplanted by those of more convenient size and shape.

In reference to dental literature, a little work—Zene Arzney, printed by Peter Jordan, at Meinz, 1532—in German, on the importance and care of the teeth, evidently compiled by a layman for popular reading, gives evidence that our science then existed; it speaks of obliterating superficial caries by the file, and directs that when the cavity is too deep to be thus disposed of, the decayed matter should be removed and the cavity filled with gold leaf. The earliest work of real scientific merit that has come down to us is one written upon dental histology by Eustachius, a teacher of anatomy at the medical school of Padua, and dated 1563. This was followed in 1582 by Hemards' work, covering the practice of dental surgery, published at Lyons, then an important educational center. These two works may justly be considered the beginning of our strictly professional literature. Systematic dental education probably originated in France, and dates back to the time of Paré, for it was there, and through the influence of that most remarkable man, that our profession received its first educational uplift. The dentist there received his technical education in company with the surgeon and the Medécin; incompetents were suppressed, and the right to practice all avocations intimately associated with health and personal comfort was early made subject to wise and just laws—Statuts et Regiemens pour les Chirurgiens, etc., Paris, 1735. Peter Fauchard, a surgeon dentist of Paris, in 1728 published his excellent and comprehensive text-book upon dental science, the first that covered satisfactorily the whole ground. Mouton in 1746 gave us the first treatise upon prosthetic dentistry; and Jourdain in 1778 the first work exclusively upon oral surgery. The works of these distinguished writers, together with those of Lecluse, Bourdet, Laforgue, Ricci, Gariot, Delabarre, Audibran and many others, give ample evidence of the worthy position our profession had reached in France during the 18th century.

In Great Britain dental education closely followed the French idea, beginning in 1799, when Joseph Fox was appointed lecturer upon the structure and diseases of the teeth at Guy's Hospital, and with such modifications as experience has suggested it follows the same line to-day. It has given us Bell, Saunders, Nasmyth, Waite, Robertson, Cartwright, Tomes, and many other worthy men, some more closely associated with the science than the practice of dentistry.

With us, from some cause, the medical and the dental profession failed to harmonize as they had done in France and England, and it was only after a long and bitter controversy that our friends in Baltimore embarked in the new enterprise. I am impressed that the representatives of our profession, in their wisdom, required more accommodation for their prospective students than the medical colleges were willing to give; and so, determined to compromise nothing which in their judgment was essential to a thorough dental education, they were compelled to go it alone. Having had personal intercourse with some of the fathers who took part in that matter, and heard from them their side of the story, I am convinced that they reluctantly did the only thing that they could do at that time to give the dental profession the much needed educational advantages. The medical colleges absolutely refused opportunity for practical instruction in the clinic and laboratory; this the fathers considered essential, and there it ended. In 1839 the first dental college was organized at Baltimore, and a desperate hard struggle it had. Students were few in number, expenses were heavy, and it was pestered, just as dental colleges are now pestered, by those possessing in an eminent degree that pernicious combination, a ready tongue and a plethora of impracticable notions. Had it not been for the liberality of its friends, who for several years contributed a handsome sum yearly, and the self-sacrificing devotion of its faculty, it would surely have failed. This was followed by the Ohio Dental College at Cincinnati in 1845; the Philadelphia College of Dental Surgery in 1850, which in 1856 became the Pennsylvania College of Dental Surgery; the New York College of Dental Surgery at Syracuse in 1852, a most promising enterprise, which through an unfortunate fire came to an end in 1855; the Philadelphia Dental College in 1863; and the New York Dental College in 1866. Since then they have multiplied rapidly.

At the time Dr. Tenison commenced practice the first national association had a few years before given up the ghost, done to death by dogmatism and discourtesy, and the present American Association was just struggling into existence. Unfortunately it seems to have inherited its predecessor's disorders and has grown prematurely old. So long as the congenital disease exists, there is little to be hoped for from the contemplated transfusion of warm Southern blood. There were then published some twenty or thirty dental journals, and strong and vigorous dental societies existed all over the land. There was, as he says, a great deal of poor work done; there was also a great deal of good work done, both prosthetic and operative, just as there is to-day, just as there will be a century from now, we may safely predict.

It is a matter of surprise to me that dentists are continually belittling dental literature. A few minutes glance at that excellent little work, the Dental Bibliography, compiled by Geo. C. Crowley in 1885, will show that from 1536 to date there never has been a time when the dental profession has not had a literature distinctively its own; a literature that may be compared without disparagement with that of any science of equal age. Since at least 1536 there has been a steady output of dental literature for popular reading and for professional use, treating upon all branches of our specialty, constantly keeping it in touch with the steady advances of the collateral sciences. If the doctor will look at the advertising sheet at the back of the copy of Harris, of which he speaks, I think he will there find a list of dental publications, by no means, however, a complete one. In addition to the reprints of the American Association, we may name as then in constant use the works of Arthur, Piggott, Handy, Bond, Flagg, Taft, Horner, Robertson and Richardson, without exhausting the list.

Looking backward, our profession in the United States has no cause to be ashamed of its representatives of nearly a century ago—of Josiah Flagg, John Greenwood, the elder Gardett, Hudson, Wooffendale of New York, the Parmley brothers, Horace Hayden, the Spooners, and their colaborers. They came from the army and from the navy; some were turners, and some were blacksmiths; others workers in brass, or wood, or stone; some were scholarly men, and others educated only in finger-craft; some from the pulpit and the schoolmaster's desk; indeed, almost every honorable pursuit contributed to fill the ranks of those who by their good work, and the original and practical ideas they introduced, gave to the dental profession in America its grand unlift, and attracted to it the admiration of the world. Let us not, however, forget that the dental science we now know, and the high professional standing of which we are so justly proud, is cosmopolitan. The German and the French, the English and the American, assisted by every civilized people on the globe, have helped to make it what it is.

REPLY TO DR. MILLS' CRITICISM.

By I. A. Freeman, D.D.S., Chicago.

In reply to the criticism of my paper by Dr. G. Alden Mills in the April number of the Dental Digest, I would say that my statement did not refer to Dr. Riggs' treatment of the so-called Riggs' disease, nor to his instruments, but rather to the instruments then found in the dental depots, and that the disease was rarely ever treated, for it was generally considered by members of the profession to be incurable. Dr. Riggs doubtless treated, and in many instances cured those suffering from this disease, but little is known, however, of his manner of procedure. As stated in the American System of Dentistry, Dr. Riggs treated the subject orally, giving his treatment clinically and not writing upon the subject; hence but little is found in the way of record of the procedure adopted by him.

Now doubtless Dr. G. Alden Mills treated pyorrhea alveolaris a la Dr. Riggs, because he was fortunate enough to come under Dr. Riggs' pupilage; however, he is but one out of many who were practicing dentistry thirty years ago, so that the statement that it was rarely ever treated holds good. A very common remark then was, that there was no cure for the so-called Riggs' disease. The scalers in common use then were heavy and unfit for the removal of calcific deposits upon the teeth. It is true, in view of those obtainable at all dental supply houses at the time, that the removal of such deposits then must have been attended with great pain and suffering to the patient.

TRICHLORACETIC ACID AS A SOLVENT OF NECROSIS.

By H. W. Allwine, D.D.S., Omaha, Neb.

Much has been and is written on the treatment of pyorrhea alveolaris, but it is not my intention to discuss the disease in this connection; but, on account of the uniformly satisfactory results reached by using trichloracetic acid in the treatment of pyorrhea, to earnestly advocate it. By a properly continued use of this acid at regular periods, and an antiseptic mouthwash at all times, I have obtained better results than by any other treatment.

Knowing that the treatment of pyorrhea alveolaris requires medicaments which dissolve calcareous matter as well as break down diseased soft tissue and stimulate new granulations, I determined to give it a thorough test in treating a case of necrosis that was sent to me, which I now describe. There is no reason, in my mind, why treatment of the two diseases should not be very similar.

Last June Mrs. B. consulted a physician concerning a trouble apparently over or at the symphysis of the inferior maxillary, and the case was placed in my hands by him. At that time the muscles about the chin were very tender and painful to the least motion, swollen, and of a dark blue color on the outside, as well as about the roots of the teeth. A fistula had formed over the root of the left lateral, from which pus exuded. This tooth was also quite sore to the touch.

I believed the pulp of this tooth was dead, and proceeded to drill into the lingual surface of the tooth. Before proceeding far I discovered my error. I forced mild antiseptics into the fistula, applied a counter-irritant, and dismissed the patient, that I might give the case careful study. In a few days the lady returned. It being a clear day, I noticed a very slight discoloration of the two centrals. These teeth were not in the least sore, but on drilling into them I found the pulps dead. The probe passed through the fistula indicated the unmistakable roughness of necrosis to the touch of the physician and surgeon, and to my own.

The quickest way out of the difficulty I thought was to make an incision and remove the cause. I also suggested to the patient the possibility of dissolving the dead structure with acid, though it might require a long time. She much preferred a fair trial of the latter method, so about once in two weeks I injected a 10 per cent solution of trichloracetic acid. Twice a week a mild antiseptic was passed into the left central, through the fistula. The apex of the right central was open nicely, but I could force nothing through the fistula from this tooth. At each visit I packed the canals with cotton saturated with mild antiseptics and carefully sealed the cavities. I thus treated the case nearly three months. Indications being very favorable, I packed the canals, sealed the cavities, and told the patient to return in two weeks. At this time a very little healthy serum was found in the left central. I treated the case as before, and told the patient to return two weeks later. Then the conditions were such as I wished to have, and I proceeded to put in the fillings. This was done the latter part of September. December 11 I saw the case. The condition was entirely satisfactory, and I believe a permanent cure was effected.

I will state briefly the history of the case. In February, 1895, Mrs. B. noticed a slight neuralgic pain in the chin, the muscles inclining to be a little stiff. This continued to grow worse, and the latter part of December, 1895, a fistula formed, as above described, and pus continued to discharge. She herself made various local applications, but the condition continuing to grow worse, she became anxious and sought advice, as previously stated.

It is very desirable that causes should be ascertained. In this case I do not find one that to me is satisfactory. Mrs. B. is 32 years of age, of mixed temperament, the bilious predominating, and of very regular habits. She is a regular, systematic pedestrian. Her health is and has been good. No calcareous nodules or deposits were found in the root-canals. No injury of any kind had been received in the vicinity of the trouble. Prior to coming here from New York State her energies were taxed somewhat, on account of sickness in the family. I should not look to the climatic change as the cause. November, 1894, shortly before the appearance of disturbance, there was suppressed menstruation, which she thought at the time might be impregnation, but it was not. Was the cause a combination of the last three conditions and changes?

Cocain is not soluble in vaselin or lard, but is readily so in olive or castor oil.—*Sage.*

Good Water.—Koch said that water is good unless it contains over 100 microbes to the cubic centimeter. Franland says that there may be many more in good water.—*Am. Micros. Journal.*

Relation of Chronic Disease of the Nose and Throat to Disorders of Digestion.—Dr. French believes that the great majority of sufferers from chronic disease of the nose and throat are the subjects of some derangement of the gastro-intestinal tract. He attributes this to the American habit of hasty and irregular eating. In a considerable number of individuals examined by him, all but a very few had evidence of some pharyngeal trouble, associated with disturbed digestion of the stomach and intestines. He lays stress upon the importance of giving this portion of the economy deserving recognition in patients presenting for local treatment.—*N. Y. Med. Journal.*

Infiltrating Dental and Osseous Tissues for Microscopical Work.—At a recent meeting of the Odontological Society of Great Britain Mr. Charters White gave the details of the method he adopts to demonstrate the presence of spaces in hard sections of dental and osseous tissues. The section to be treated must be ground moderately thin, to about $\frac{1}{32}$ inch, and then immersed in absolute alcohol for five minutes, and subsequently in ether for a similar period. It is next transferred to a thin solution of celloidin (three grains of celloidin to half an ounce of equal parts of absolute alcohol and ether). This solution is colored red by the addition of fuchsin, the stain being added to the alcohol before the celloidin is dissolved. The specimen is allowed to remain in the solution for two or three days, after which it is removed and placed on paper to dry. The section is then ground to the desired tenuity and mounted on balsam. The advantages of the process are (1) the cavernous and tubular structures in dentin and bone are filled with a colored medium, which prevents the balsam from running into such spaces and so obliterating them; and (2) the section is rendered less brittle and so can be easily ground down without much fear of fracture.—*English Mechanic.*

Digests.

THE NEW ANTISEPTICS OF DR. CREDE: SILVER AND THE SILVER SALTS AND THEIR USE IN DENTISTRY.

By Dr. M. Hille, Dresden. Read before Dental Association of the Kingdom of Saxony, Oct. 24, 1896. Though modern surgery has turned from antisepsis to asepsis, the former is by no means superfluous. Asepsis cannot be obtained in many conditions in which the external circumstances are such that microbic infection cannot be prevented, or where it has already occurred. Moreover, antisepsis often gives us quicker and better results than does asepsis. Especially is this the case in the mouth, the field of our special labors, which is a perfect culture oven of exogenous and endogenous microorganisms, and where aseptic procedures are entirely applicable. We dentists are compelled to rely on antiseptics; and if I propose a new one to you and recommend it most warmly, it is because of the good results that I have obtained with it in various departments of our specialty.

The ideal antiseptic must possess the following properties: It must be harmless, non-poisonous and non-irritating; it must be fatal to all pathogenic spores and microbes; it must have no deleterious or destructive effect upon the tissues; it must be in a form that renders its application possible in the most difficult localities; and, finally, it should be sufficiently far-reaching in its effects to penetrate the deeper tissues and destroy the germs that may have penetrated to them. None of our previous antiseptics fulfill these conditions. Crede believes that two new ones, the citrate of silver and the lactate of silver, really do so, and his conclusions are confirmed by those of Halsted, Beyer and others. His bacteriological and clinical experimentation in the Carola Hospital of Dresden have given surprisingly good results.

We dentists are well aware of the fact that the precious metals, in proper form, hinder the growth of the schizomycetes; that gold fillings are more resistant and more durable than others. I, with Miller, ascribe it in part at least to this fact, though something may be due to the greater care with which fillings of the precious metals are made. Gold plates are better borne by the oral mucous membrane than those made of hard rubber. It seems to be proven that various metals, more especially mercury, silver and gold, have antiseptic properties; whilst zinc, lead and iron seem to be quite powerless in this regard. The laboratory experiments and clinical researches of Crede and Beyer were so entirely satisfactory that I resolved to try the new antiseptics in dental work. In the sterilization of root sinuses I thought that they would be specially useful. My trials were made upon teeth with freshly killed pulps, as well as upon those in which the pulps had become gangrenous, and include about one hundred cases. And I may state at once that my hopes were not disappointed. The results that I have obtained during the last half year have been entirely satisfactory to me, and I can warmly recommend these preparations to my colleagues.

I directed all the patients that I treated with silver salts to return to me at once as soon as any pain occurred in the teeth that had been treated. Up to the time of this present writing only three have reappeared with periostitis, and in two out of these three the defects in the molars were distal and difficult to get at.

My method of root treatment is the following: I open the pulp cavity with a suitable trephine, and if the pulp is gangrenous, clean it out as thoroughly as possible with a thin probe. Then I thoroughly and repeatedly inject out the root-canal with a freshly prepared and dilute solution (1 : 2,000) of the lactate of silver. Then I apply the rubber dam, dry the cavity thoroughly with cotton and then thoroughly with the warm-air injector, to the completeness of which procedure I attach the greatest weight. For I believe that even if dead nerve tissue remains behind, further decomposition and development of the gases of putrefaction cannot so readily occur if all moisture be thoroughly removed, and the mummification of whatever nervous tissue is left behind be effected. Here the powdered citrate of silver is of especial value, since it not only disinfects the decomposition products that remain, but also acts as a dessicant in consequence of its powdered form. As is well known, the difficulty in the sterilization of root-canals depends on the difficulty of thoroughly applying the antiseptic to them. I believe that it is best done by applying the citrate through an insufflator, to the nozzle of which a rubber tube with a very small orifice is attached; this permits the application to be made to all the sinuosities of even the distal canal. The pulverization is fairly forcible, and, if the lumen of canal be sufficiently large, I do not doubt that particles of the drug reach the very ends of the sinuses. If the insufflator does not seem to have effected this, I apply the powdered citrate to the depths of the canal on a thin probe.

Recently killed pulps I usually fill at one sitting, simply dusting in the citrate after opening the cavity with a sterilized bur, and filling with tin or gutta-percha in the usual manner. When the root-canals are putrid I deem it necessary to make two or three applications and insufflations of the citrate or the lactate before proceeding to the permanent filling. It is surprising to see that in most cases after the first introduction of the silver salt the odor of decomposition entirely disappears. I have seen no discoloration of the teeth in the cases that have returned to me; it is true, however, that they were all molar cases. Only the cavities were colored black. Irritation symptoms after the applications were never noted. I do not claim that this method of the treatment of roots is the only proper one, for there are almost as many different methods as there are practitioners of dentistry, but with these antiseptics I have formulated a suitable and effective system of treatment.

In conclusion let me state that I have used the silver preparations in various other diseases. I have used the gray silver gauze in one case of empyema of the antrum of Highmore, and as a tampon for the hemorrhage following extractions, and also the dilute solutions as gargles in stomatitis; and I have obtained like satisfactory results with them. The small number of cases over which my experience extends are too few to base a final judgment on, but the good results enable me to recommend that these silver salts be extensively experimented with and tried by others, and I should be glad to stimulate those of my colleagues who have not yet used them to do so.—*Deutsche Monatsschrift fur Zahnheilkunde, May, 1897.*

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REPLACEMENT OF A FRACTURED PORTION OF A CENTRAL INCISOR. By C. Robbins, L.D.S. Eng. In September last a young lady, aged 15, was looking at a hockey match, when a large pebble, accidentally hit by one of the players, struck her in the mouth, breaking off the mesial corner of the right central. This corner fortunately fell into the mouth and was carefully preserved. The fracture was not sufficient to involve the pulp. Nitrate of silver was applied to the sensitive dentin and a model taken. At a later date the small tip of tooth was carefully drilled at the strongest part with the smallest rose-head bur, and into the hole thus made a platinum pin taken from a crushed artificial tooth was fitted and cemented, the platinum pin having been previously strengthened with a small quantity of gold solder. The rubber dam was applied, a small interstitial gold filling drilled out, and from this point a double groove drilled. The platinum pin was then flattened so as to glide up this groove, and the entire thing secured with cement. A mistake made was in cementing in the platinum pin to the piece before trying in the mouth, for in one part the pin was so near the labial aspect of tooth that a pin point of cement showed, otherwise the only indication was the oblique crack in enamel. The tooth when seen recently was doing well.—*Jour. Brit. Dent. Assn., April, 1897.*

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LARGE MOUTH CONCRETION. By Dr. James Bell. Mrs. G——, aged 32, consulted me in September, 1896, for a large growth of long standing which filled the right buccal cavity and had caused ulceration through the upper lip and great deformity of face. At the age of 12 years she suffered from "fever," that lasted considerable time, followed by a slow convalescence, during which the teeth in the right side of the lower jaw became loose and dropped out one by one, but without any pain or ulceration of the gums. In about six months she began to notice a "shell-like" mass on the gums from which the teeth had fallen, apparently in the area occupied by the molars. For ten years this growth was gradual and gave little trouble; then deformity began and increased steadily, but it was only within a year that marked increase in the size of the mass and troublesome symptoms developed. The growth filled the whole right cheek and produced great fattening of the right side of the face and the right nostril; had ulcerated through the upper lip at one point, and the whole lip was greatly swollen. The point which presented at the angle of the mouth was evidently calcareous, but I mistook this for a simple coating. The fetor was horrible and the mouth so sensitive that manipulation was impossible. I looked upon it as a growth from the upper alveolar border, probably originally of the nature of epulis, but having recently (coincidently with the history of rapid increase in growth and symptoms) become malignant; so advised the removal of the upper jaw. She went home, but returned October 12, and prepared for operation on the 19th. When fully anesthetized I was able for the first time to make a critical examination, and then found to my surprise that the mass consisted simply of a large concretion the size of a large hen's-egg, lying free in the mouth, having formed a cavity for itself by displacement ot the soft parts and absorption of the alveolar border of the lower jaw. It was so large that I removed it with considerable difficulty. A couple of teeth were imbedded in its lower border, and it was clearly an enormous growth of "tartar." The ulceration of the lip healed rapidly, and the patient was discharged in a week quite well, except for the deformity which had occurred during the growth of the mass. The mass, which was oval in shape, measured 13.5 centimeters in its greatest circumference, and 11 centimeters in its smallest circumference.—*Montreal Medical Journal.*

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COMPARATIVE VALUE OF EUCAIN AND COCAIN. By Dr. M. Reclus. The following results relative to the use of eucain and cocain are of interest to the profession, since the experiments which I have conducted have proven the following facts: (1) The injection of cocain is not painful, while that of eucain causes a certain smarting sensation. (2) Eucain is a vaso-dilator, while cocain is a vaso-constrictor; and with the former the field of operation is clouded by the flow of blood. (3) Eucain is a most excellent analgetic, although in deep operations the perception of pain seems to be somewhat more distinct than with cocain. (4) Anesthesia is more complete and of longer duration with cocain. If eucain were less toxic than cocain, it should still be preferred in spite of this slight inconvenience. In upwards of sixty experiments on animals it proved fully as toxic as cocain. I prefer the use of cocain as a local anesthetic since it gives a warning, as the patient shows symptoms of intoxication prior to death, while eucain causes death without premonitory evidences.—Translated by Dr. B. J. Cigrand, from *Presse Medicale, February, 1897.*

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ORAL SURGERY. By Edmund W. Roughton, B.S., M.D. (Lond.), F.R.C.S. Eng. *Foreign Bodies in the Nose.* These are more common in children than in adults. They are usually introduced in play. Sometimes the accident is noticed at once, and the child is brought to the surgeon with a distinct history of a foreign body having been introduced; the diagnosis is then easy, and removal can be effected with forceps or a bent probe. In the majority of cases there is no history of any foreign body having been introduced, and the child is brought on account of a purulent discharge from one nostril. The pus may be sanious or brown, and in some cases very offensive. The occurrence of unilateral purulent discharge in a child should always lead to careful examination with speculum and probe, an anesthetic being given if necessary. In a recent case the foreign body will be easily seen, but if it has been long resident in the nose it may be hidden by swollen mucous membrane, granulations, blood or pus. If seen, it usually looks black, either because that is its natural color, or because it is covered with dried blood. When it cannot be seen the diagnosis must be made by the probe. It must be borne in mind that unilateral nasal discharge may sometimes result from syphilitic or tubercular disease, although these two conditions are much more common in adults and usually affect both sides of the nose.

Treatment. When the foreign body has been recently introduced it can usually be removed with a probe bent into a hook, or with a narrow-bladed pair of nasal forceps. When the foreign body has been impacted for some time an anesthetic should be administered; a finger should then be inserted into the naso-pharynx, lest the foreign body be pushed backwards and fall into the larynx. Sometimes the desired result may be obtained without any anesthetic, by forcing air or a stream of water into the opposite nostril whilst the mouth and the affected nostril are kept open.

Foreign Bodies in the Pharynx. For practical purposes they may be divided into two kinds. (*a*) Small and sharp, such as pins and fish-bones. These cause a sharp pain at the time of impaction, and subsequent irritation which may last for a long time, even after the intruder has been removed. (*b*) Large bodies, such as masses of food or tooth-plates. The chief symptom is dyspnea. Occasionally a large foreign body may lodge in the pharnyx and remain there without causing any serious trouble.

In all cases the nature and situation of the foreign body should be ascertained by careful inspection, aided by a good light and a laryngeal mirror. Sometimes the foreign body is hidden in a fold behind the tonsil and cannot be seen; in such cases the finger should be introduced and guided to the spot at which the patient feels pain. The finger should not be used until after failure of inspection, on account of the risk of driving a penetrating body further in, or even perforating a large vessel, such as the carotid. When the position of the foreign body has been discovered, it can usually be removed by forceps of suitable length and shape. Large bodies with sharp corners, such as tooth-plates, when impacted low down may necessitate pharyngotomy

Foreign Bodies in the Larynx. These may be divided into two classes, according to the symptoms they produce: (*a*) Those that are large and cause urgent dyspnea, or being small are so placed as to impede respiration. (*b*) Those that are small and which after the first paroxysm do not cause dyspnea.

The symptoms may be divided into three stages: (1) Those of obstruction immediately following the introduction of the substance. (2) Those of irritation produced by its presence. (3) Those of inflammation coming on at a later period. (1) Symptoms of Obstruction.—When a large body, such as a piece of meat, becomes impacted at the entrance of the larynx it may cause instant suffocation. Smaller bodies may also cause intense, even fatal dyspnea by setting up reflex spasm of the glottis. (2) Symptoms of Irritation.—The patient is usually first seen by the surgeon after the first attack of dyspnea has passed off. The voice is then hoarse and croupy, there is a loud, rough sound in respiration, which is more or less impeded and attended by attacks of spasmodic cough. In adults a laryngoscopic examination may be made in the intervals between the attacks and the position of the foreign body ascertained. In children a laryngoscopic examination is almost impossible, but the foreign body may sometimes be detected by means of the finger passed down to the larynx. (3) Symptoms of Inflammation.—If the foreign body remain impacted in the larynx, in a day or two it will set up laryngitis, from which the patient may die.

Treatment. This must necessarily vary with the urgency of the symptoms and the nature of the foreign body. Where there is impending suffocation, and the substance cannot be dislodged with the finger, laryngotomy should be instantly performed, as this operation affords the easiest, safest and most rapid way of admitting air. When the symptoms are less urgent, a deliberate attempt should be made to remove the foreign body by forceps under the guidance of the laryngoscope. These means having failed, an external operation must be performed, the position of the opening being adapted to the position of the foreign body; thus when above the vocal chords, sub-hyoid pharyngotomy should be performed; when between the cords, or in the ventricle, thyro-chondrotomy; when below the cords, laryngo-tracheotomy or tracheotomy.

Foreign Bodies in the Trachea and Bronchi. Small objects, such as buttons, coins, etc., may be drawn into the trachea, if a sudden inspiration is taken during the act of swallowing, or when such things are being held in the mouth. If the substance is light, it will probably remain free in the trachea, floating up and down with the current of air, but if heavy it will become impacted in the trachea or one of the bronchi. Elongated bodies, such as a piece of pencil, more often find their way into the left bronchus, as its axis is more in line with the trachea, whereas rounded bodies more often enter the right bronchus, as its lumen at the tracheal bifurcation is larger.

The symptoms are divisible into the same stages as those of laryngeal foreign bodies. At first there is an attack of urgent dyspnea, upon the subsidence of which the most characteristic symptom is paroxysmal suffocative cough and dyspnea, in consequence of the foreign body being driven up against the glottis. These attacks of cough occur only when the body is free to move in the trachea. When it has become impacted in one of the bronchi it prevents the air entering the corresponding lung, diminishing or abolishing the respiratory murmur. If the foreign body acts as a valve, and allows air to emerge from the lung whilst preventing any entering it, the result is collapse of the lung. If the foreign body remain long in the bronchus it is apt to set up bronchitis, pneumonia, or abscess in the lung; sometimes it may become encysted and do no further harm.

Treatment. Inversion and shaking may be tried in the first instance, but everything should be ready for immediate tracheotomy should the foreign body become impacted in the glottis. Probably the best treatment is to perform tracheotomy in every case, as soon as the patient comes under observation. It often happens that when the trachea is opened the foreign body is expelled through the wound, or even through the mouth. Should immediate expulsion not occur, no tracheotomy tube should be inserted, but the edges of the tracheal wound should be kept apart with blunt hooks. Search may then be made by means of tracheal forceps or bent wire.

Foreign Bodies in the Esophagus. Tooth-plates, coins, etc., most often lodge in the commencement of the esophagus opposite the cricroid cartilage. The symptoms are pain, often referred to the episternal notch, a pricking sensation in the throat, difficulty in swallowing, and sometimes dyspnea if the foreign body exerts pressure on the air passage. Extraction may be effected by means of pharyngeal forceps, the coin-catcher, or the expanding horse-hair extractor. Should these means fail the case may be left for twenty-four hours if the substance is of a nature to become softer, and then a gentle attempt may be made to push it onwards towards the stomach with a sponge probang. If the foreign body resists all attempts at dislodgment, it may be necessary to open the esophagus in the neck, or even in the thorax by resecting a portion of the third, fourth and fifth ribs midway between the spine and the left scapula. Should an angular body such as a tooth-plate have passed into the stomach the patient should be directed to eat porridge, hair, cotton-wool, etc., so that the sharp projections may be sufficiently covered to pass along the intestine without doing harm. If the foreign body is too large to pass the pyloric valve, gastrotomy must be performed.—*British Journal of Dental Science, May, 1897.*

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CONSOLIDATION OF THE TWO ASSOCIATIONS. By Dr. B. H. Catching, Atlanta, Ga. Editorials, correspondence and observation have for some time indicated a necessary change in the national dental organization of the United States. It has not required the closest observation to see that neither the American nor the Southern Dental Association is measuring up to the standard required by the advanced position of the dental profession. They have served a good purpose and are now ready to give way to an organization which shall unite the profession as a whole and render results commensurate with the calling of which it should be the representative.

There should be no obstacle thrown in the way of such an organization. While some may have feelings of strong attachment to the existing associations, yet they should lay sentiment aside for professional advancement. The men who have been in the forefront of professional life and progress will almost to a man join in this move.

From a sectional standpoint there may have once existed a reason for the two separate organizations. That reason no longer has force in the minds of those who think above sectionalism. The spirit dominating the mind of the sectionalist is not the spirit of progression, but of retrogression. There are enough men in the dental profession whose minds are sufficiently cultivated and enlarged to form an organization which shall represent the advanced thought and progress of the age.

This is not the time to set forth plans for such an association, but it is not out of place to consider the plan as proposed by Dr. Harlan, who, as president of the American Dental Association in 1891, made the suggestion of dividing the country into quarter sections—namely, northeastern, southeastern, northwestern and southwestern, each division to have an organization to be known by the name of its respective territory; each division to meet annually, working under the same rules. From the four divisions organize a national association to meet quadrennially at a given point, at which place would be a museum, library and apparatus for research.

This seems to be an admirable suggestion, one not only feasible but practicable. This country is too large to be well represented annually in one organization. Distances are too great. As it stands, one-half the country is virtually denied the privilege of a national gathering. The quarterly division of the country, with an organization in each, would give that location which has been denied the benefit of organization, save state associations, vast advantages. Neither the American nor the Southern Dental Association can hold successful meetings west of the Mississippi River. Neither can the American have a large meeting if held in the south, especially if the time is in the summer months. Every section of the country would be benefited by such a division of territory. Each section would vie with the other in good work. There would be a stimulus that is badly needed given to dental meetings; such a stimulus would bring forth work deserving a high calling, and lift association work out of the ruts in which it has been running for many years. Everything can be said in favor of this plan and nothing can be said against it. —*International Dental Journal*, *May*, *1897*.

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"NOT FAILURE, BUT LOW AIM IS CRIME." By J. G. W. Werner, D. M. D., Boston. Read before American Academy of Dental Science, Dec. 2, 1896. What are some of the most essential qualities of a successful dental practitioner? First, as stated in my prefix, a quotation from Lowell, all of us should *aim high*, for a low aim in our profession is more criminal than an *honest failure*. Conscientiousness should predominate, direct and guide us in all our work. Second, moral purity and integrity of character are necessary if we would win the confidence of our patients. At this critical period of psychological study and research, when from infancy and childhood we are subjected to such searching scrutiny, is it any wonder that we human beings become so sensitive that a moral taint of any kind is quickly felt or detected at a glance, and an instantaneous aversion or repugnance is the consequence? Who has not experienced this feeling on coming in contact with certain persons, though they be comparative strangers and the meeting only casual? How much more keenly must such repugnance or aversion be intensified in the close personal relation that necessarily exists between the operator and his patient, if he is not morally pure.

Then, as, so often and so aptly quoted, "cleanliness is next to godliness," the most scrupulous care and attention must be given to personal neatness in every detail, especially in regard to the hands, nails and breath. A simple lotion of rose-water, glycerin and alcohol is an agreeable application to use each time after washing the hands. The operating-coat should be suitable in texture and color and always neat and clean. In the office and operating-room an atmosphere of immaculate neatness and thorough ventilation should prevail. It is indispensable that no odor of medicaments be detected either in the apartments or about the person of the operator. Nothing but the cleanest napery and the most thoroughly cleansed, sterilized and polished instruments should be used, especial care always being given to the mouth-mirror. The most careful dentists insist upon individual mouth-mirrors.

As few as possible of the necessary instruments and appliances should be exposed to view, thus avoiding undue suggestion of the operation to the patient. With the constant multiplicity of equipments there is also a danger of the operating-room having the appearance of a machine-shop.

One of the most helpful and essential factors of a well-appointed office and operating-room—one that greatly facilitates the operations; that attends to the appointments and cares for the instruments, and gives tone to the whole place—is the neat, refined, and well-trained lady assistant. In my estimation, she is an indispensable adjunct in our work.

The third essential is professional skill and ability. Nothing is of greater value and importance to the operator in this direction than the acquiring and possession of a gentle yet firm and sure touch. For what can weary and excite a patient more than the uncertain or unskilled handling of sharp instruments, where a sudden slip might lacerate the pulp or inflict a wound upon the surrounding tissues? The awkward, noisy, or unskillful manipulation of the instruments, either by the operator or his assistant, is also a great annoyance, and produces an undesirable effect in the mind of the patient. Much valuable time may be wasted by an unsystematic arrangement of the necessary instruments for daily use, or from an unfamiliarity with and an unskilled use of the same, and also by an indecision in quickly selecting the one best suited for a particular case. A good rule is to have a few carefully selected instruments, and learn to use them well.

Fourth, tact, in my opinion, is an important factor in meeting our patients, and in successfully allaying any fear or apprehension that naturally arises in the mind of the one who is about to undergo either a surgical operation or a medical treatment. A quiet, reassuring demeanor, and a few kindly sympathetic words help greatly to accomplish this; while nervous movements, brusque manners, harsh or careless expressions tend—especially with women and children—to create distrust and antagonism, and will repel the patient.

Another important point, but one delicate to emphasize, is the need of our patients understanding the necessity of constant care of the mouth. A thorough brushing and massaging of the gums as well as the teeth several times daily, and an occasional scraping of the tongue, are invaluable. A neglect of such care, I believe, is at the foundation of the so-prevalent pyorrhea alveolaris.

Every operator in treating decay in approximate surfaces should endeavor to fully restore contour, thereby greatly promoting the comfort of his patient and the general healthfulness of the mouth. For the normal arrangement of the teeth is a continuous, uninterrupted grinding surface, and spaces between approximate surfaces are unclean, annoying and detrimental.

I might suggest other subjects for our consideration, such as the treatment of root-canals, the importance and various methods of separating the teeth before operating upon them, the preference for certain filling-materials under certain conditions, etc., all of which, when rightly understood and conscientiously practiced, would help us to attain that success at which we all aim; but I will speak of only one more—namely, the great importance of good health to the operator. Sir Benjamin Richardson, M.D., of England, thinks that the normal period of human life is about one hundred and ten years, and that seven out of ten people could live that long if they lived in the right way. They should cultivate a spirit of serene cheerfulness under all circumstances, and should learn to like physical exercise in a scientific way. "No man," he says, "need be particularly abstemious in regard to any article of food, for the secret of long life does not lie there. A happy disposition, plenty of sleep, a temperate gratification of all natural appetites, and the right kind of physiical exercise will insure longevity to most people." Unfortunately for his excellent theory, this celebrated physician and author of hygienic works died from apoplexy at the age of only sixty-eight years.

Practicing dentistry, like most indoor occupations, has its detrimental effects; it tends towards short life instead of longevity; and it becomes our duty to counteract the injurious effects that our calling produces. In a general way, we may say that dentists look pale; have a tendency towards nervousness; are more or less dyspeptic; have an enfeebled circulation, heart-action and respiratory function; acquire a contracted chest, and are short-breathed. When we take into consideration our contracted position at the chair; the inhaling into our lungs more or less of the exhalations from the patient, such exhalations containing one of the most poisonous known alkaloids or ptomaines in existence; as well as the general nervous, strained condition that we are in while doing minute, delicate work, and all the time trying not to hurt; or, if we do inflict pain, to have a sympathetic perception of the same; it is not strange that all these should produce an enfeebled condition of health. When we ponder this fact we must see at a glance the desirability, yes, necessity, of taking regular out-of-door exercise.

For years I have made it a point to work in a gymnasium; to keep an erect posture; to expand the chest by practicing deep and full respiration; and have endeavored to be out of doors at least two hours out of the twenty-four, either walking, riding horseback, or bicycling. From years of personal experience I know the great benefit and tonic effect of regular daily cold-water bathing. Nothing rests me more than to get into a profuse perspiration from physical exercise and to take a quick cold bath afterward. If we wish to keep in good health we must eliminate from the system the used-up, broken-down and effete matter; and we must not forget that through the skin, with its miles of eliminating and perspiratory ducts, is one of the best ways to accomplish this object.

As professional men we cannot place too high an estimate upon the great importance of unimpaired health. Good health so often means pure morals, cheerfulness, helpfulness, wholesomeness in every direction. Though I have spoken of good health last, I believe it is of almost the first importance, and in recapitulation I might say that some of the important essentials of a successful practitioner are first, health; second, tact; third, professional skill, conscientiousness and ability; fourth, integrity, moral and personal purity; and fifth, a high aim.—*International Dental Journal, May, 1897.*

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RADICAL TREATMENT OF CHRONIC ALVEOLAR ABSCESS. By S. H. Guilford, D.D.S., Ph.D. To the thoughtful mind it appears truly surprising that so little advance has been made in recent years in the treatment of obstinate cases of alveolar abscess. The line upon which the treatment of these cases is generally conducted varies but little from that of twenty-five or even forty years ago. Some minor changes have taken place, as in the variety of medicaments employed, and the forms of drills and other appliances for gaining access to the seat of disease, but the methods of treatment have undergone very little modification. The old method of treating serious pathological conditions existing at or near the end of the root, by forcing medicaments through the canal, still prevails to a surprising extent.

In alveolar abscess of recent origin, especially where the tooth is a single-rooted one, and where there is a fistula for the exit of pus or medicaments, treatment by way of the canal is not only justifiable, but oftentimes constitutes the simplest and most direct method of treatment; but where the root affected has a contracted canal and is more or less curved, as in certain molar roots, access to the seat of trouble is not only exceedingly difficult, but oftentimes impossible with any degree of certainty. Attempts to reach the apical end of the root in such cases, either by drilling or reaming, too often result in the unconscious perforation of the root at some point of its length, thus increasing the complications of the case and making failure more certain.

It is no uncommon thing to meet with cases where an abscess has been treated for months or even longer by way of the canal, and after an abatement or temporary suspension of the manifestation of disease symptoms, the root has been filled only to revert to its former condition in a very little while. In other cases there is failure to obtain even sufficient temporary improvement to warrant the closure of the root-canal, and treatment is continued and continued in the hope that a change for the better may take place, until the patient is discouraged and either decides to consult some other practitioner, or insists upon the removal of the affected tooth.

Probably no class of cases gives the young practitioner more anxiety or causes him to feel his helplessness so much as those of persistent alveolar abscess. Of the letters asking advice, received by any dental college professor from young graduates, a large proportion will be found to bear upon this subject. They wish to know why the abscess does not yield to treatment and what medicaments other than those they have employed can be suggested for the case in hand. The feeling seems to prevail that the failure to secure success lies with the drugs they have employed, or possibly with the manner of their introduction. If the hidden parts that they are treating could be laid open to their view they would soon discover that the cause of their lack of success in treatment was due to a condition that drugs alone could not relieve—one that needed mechanical or surgical aid rather than medicinal.

The commonly accepted idea of an alveolar abscess is that of a sac at or near the end of a root, which has been formed by the pericementum becoming loosened from the cementum of the root through disease, and whose function has been so changed by pathological causes as to be pyogenic in character. That to restore the parts to health it is only necessary to treat the condition as we would treat an abscess anywhere in the soft tissues of the body; that is, to empty the sac, remove all traces of pus by syringing with water and hydrogen peroxid or pyrozon, and then apply some suitable cauterant and stimulant to alter the character of the secretions of the inclosing membrane. It must be borne in mind, however, that an alveolar abscess differs radically from one confined to the soft tissues alone in that it is so surrounded and inclosed by bony tissue that this latter becomes readily affected and destruction of its substance supervenes. When this necrosis occurs, as it does in all or nearly all cases of alveolar abscess of long standing, we have a complication that medicaments alone cannot possibly relieve. To effect a cure, the diseased bone must necessarily first be removed, after which medicaments or possibly the recuperative processes of nature, aided by antiseptic treatment, will give the desired result.

No one is so well equipped to perform this slight surgical operation as the dentist with his engine and burs and his correct knowledge of the anatomy of the parts. It is a very simple operation to lance the gum over the seat of the disease, drill through the process to the root apex, and then with a round bur of sufficient size cut off the apical end of the root and remove as much of the adjacent alveolar tissue as may seem to be affected. Previous to doing this the root should be permanently filled, for it cannot be done so well afterward. After the operation it is only necessary to wash the cavity well to remove all debris, pack with iodoform gauze, and leave the result to the kind hand of nature. This treatment of persistent alveolar abscess is radical, but it is also simple, and in the light of our present knowledge is the only rational method of treatment in cases of this character. Although it has not yet become a common practice it is growing in favor, and with those who do employ it is followed by the most satisfactory results. The day for long, fruitless treatment of cases of alveolar abscess, which by their obstinate resistance to medicinal treatment indicate necrotic associations, is past, and the sooner this is recognized the better it will be for both patient and operator.—*The Stomatologist, May, 1897.*

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CASE OF RETARDED ERUPTION OF CUSPIDS AND SUPPRESSION OF THE LATERALS TREATED BY THE INSERTION OF A DENTURE. By C. Robbins, L.D.S. Eng. This patient was a lady aged 17, in whose family there was a history of suppression of laterals and retarded eruption of permanent cuspids. In the patient's grandmother the cuspids had been erupted late, and had to be removed. A cousin of the patient was also minus centrals and laterals in the upper jaw. The treatment adopted was as follows: The upper centrals, which were widely separated from one another, were fitted with gold collars, small projections being added on the distal aspect to prevent the elastic bands from slipping up during the process of bringing the teeth together. The teeth proved to be very stubborn and resisted the action of elastic bands. "*Gill-*

ing twine" was then used with marked results, the teeth being brought into actual touch in ten days. After the teeth had been kept in position for a short time, an ordinary small vulcanite suction plate was fitted, carrying the missing laterals and one cuspid.—*Jour. Brit. Dental Assn., April, 1897.*

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NUMERICAL VARIATIONS IN THE MOLAR TEETH OF FIFTEEN NEW GUINEA CRANIA. By George A. Dorsey, Ph. D., Assistant Curator of Anthropology, Field Columbian Museum, Chicago, Ill. While recently examining a series of Papuan skulls, I was surprised to find the range of variation in the molar teeth to be so great. It is not often that within the compass of a small collection of crania from a single locality one sees so beautifully illustrated the now common enough observation that in the course of man's phylogenetic development he has already lost one or more pairs of teeth, and is about to lose one more. To be more exact, there are in the series three examples of suppressed third molars, and two examples of a supernumerary molar. Without entering into a discussion as to the morphological signification of anomalous conditions of this sort, I shall simply record the facts as they exist. Those who are interested in a discussion of the signification of such observations as I shall have to record, will find the whole matter of numerical anomalies in the teeth summed up briefly and well in Weidersheim's Structure of Man, pp. 156-161.

The collection of crania under consideration was purchased from a trader who brought them from New Guinea, where they had graced the home of a native chief, who prized them as trophies of victims slain in war. They are of more than usual interest because the frontal bone of each skull is ornamented by incised carvings of a symbolical character, and the lower jaw is held in place by a band passing through the nares and around the symphisis, and by other bands which pass through a hole in the ramus just beneath the sigmoid notch and are fastened to the zygomatic arches.

It is a remarkable fact that, so far as I can see, there is not an unsound or diseased tooth in the entire series; nor, with but two exceptions, is there a single case where a tooth had been lost and the alveolus absorbed. In the first exception the lower jaw has been fractured, and as a result the alveoli of two molars are destroyed; in the second case the molars on one side are gone, the alveoli absorbed, and the maxillary sinus laid open in three places. It is also worthy of note that in no skull was the wear of the teeth enough to amount to anything. In one case only could the degree of wear be said to equal that of No. 2 of Broca's scale.

Suppressed Molars.—No. 40,618.—Skull of an adult male. The first thing that strikes one on taking up this skull is that it is too light, too smooth and too small to be that of a male; but, on the other hand, a closer and more careful inspection seems to convince one that it is entirely too heavy, too rough and too large to be the skull of a female, and so, without any serious questioning, I have considered it as a male skull. The upper left incisors and cuspid have been lost; their alveoli are perfect. The teeth present are sound and healthy. The jaws are markedly prognathic, and do not seem unusually short. In this skull both upper and lower third molars are entirely suppressed.

No. 40,607.—Whatever slight doubt there might have been in regard to the sex of the skull just described, there can be none here, for it is a typical skull of an adult female. There are two very striking features about this skull, apart from any consideration concerning the teeth. The first is the extreme prognathism of the entire face, and especially of the alveolar arches; and second, the very weak mental development of the lower jaw. The upper left third molar is present, but is crowded upward and backward until it almost rests on the alveolar arch just behind the last lower molar. In life it must have pressed heavily on the gum. The remaining three third molars are suppressed. All the other teeth are present and in perfect condition.

No. 40,620.—Skull of an adult male, of slightly advanced age. Only the following teeth are in situ: upper right cuspid, left cuspid and second bicuspid, and lower right second and third molars and left first and second molars. These teeth are somewhat worn. None of the alveoli of the other teeth are closed. The upper third molar on each side is entirely suppressed. Reference has already been made to the lower jaw of this skull. It may not be without some interest to record its condition a little more fully. The right body shows very plainly the lines of union of an old fracture which evidently extended through the bone and involved the alveoli of the second bicuspid and the first molar. At this point exists a deep circular excavation which extends down into the jaw for more than half its normal depth, and gives rise to a rounded eminence on its inferior surface.

Supernumerary Molars.—No. 40,614.—Skull of an adult male, of large capacity and good development. Only the lower molars and upper first molars, right cuspid and first bicuspid are in situ. The remaining alveoli are all open and in good condition; many of them, however, contain tooth-like plugs of wood, put in after death for adornment. As the lower jaw of this skull is detachable, it is possible to examine in some detail the cusps of the teeth. The upper first molars, the only ones present, have each five cusps, the extra cusp being situated just posterior and a little to the labial side of the oblique ridge which connects the anterior lingual with the posterior labial cusp. The second molars have only two fangs, and these are merely indicated in the alveolus by a slight median ridge on its posterior surface. The cusps in the lower molars are normal; that is, the first has five, the second and third have four each.

The supernumerary bicuspid occurs in the lower jaw on the right side, opposite to the interval between the first and second bicuspids, on the lingual side. Just the crown of the tooth is visible, and during life it evidently had scarcely begun to enter the gum. The crown is 7 mm. long and 5 mm. in its antero-posterior diameter. The tooth is bicuspidate and, so far as the crown is concerned, does not differ from the ordinary bicuspid tooth.

No. 40,611.—Skull of an adult female. In many respects, so far as its general character goes, it does not differ materially from number 40,607, which has already been described. The decided alveolar prognathism is very striking. In this skull also the lower jaw can be detached and we can study the hard palate as well as the teeth. The palate is remarkable for its great depth in proportion to the general size of the face; it measures more than 15 mm. in several places. There is a well defined *torus palatinus*, and the transverse palatine suture is not straight, but irregularly oblique on each side, owing to the encroachment, along the median line, of the palatine plates on the maxillary bones. Both of these conditions are more often associated with the dark races than with the white, and are the usual condition in some of the anthropoid apes. The upper right mesial incisor, left incisors and cuspid, and the lower left lateral incisor, cuspid and first bicuspid teeth have been lost; their alveoli are perfect. The other teeth are all present and in sound, good condition. The most striking feature in regard to the teeth present, and one which is apparent at even a superficial glance, is their very large size. This may best be shown by reference to the *dental index* of Flower. The dental length (the distance from the anterior surface of the first bicuspid to the posterior surface of the third molar of the upper jaw) is 46 mm.; the basi-nasal length (the distance from the median anterior border of the foramen magnum to the naso-frontal suture) is 94 mm. From these we obtain the dental index by this formula:

$$\frac{\text{dental length} \times 100}{\text{basi-nasal length}}$$

which in this case is 48.9; the average for both sexes in the Papuans being 44.2, and in Europeans, 41.3.

The first upper molars have five cusps, the second molars four, and the third molars five, a very unusual condition. It is also to be noted that the third molar is distinctively larger than the second, and fully as large as, if not a trifle larger than the first molar; this is true of the right side only. Of the lower molars, the first and third have five cusps, or the usual number; the second has only four, or one less than the usual number. The supernumerary tooth is situated in the lower jaw on the right side, between and internal to the second bicuspid and the first molar. The root of the tooth seems to lie nearer that of the molar than that of the bicuspid. The crown is directed considerably inward and slightly forward. In character it approximates the first bicuspid rather than the second, in that the lingual cusp is much smaller than the labial, and furthermore, it does not possess that quadrate form which is so characteristic of the second lower bicuspid. The crown has barely cleared itself of the alveolus, and it is not likely that it had as yet made its way through the gum. Only the superior and a very slight portion of its anterior surface is visible. The crown measures 8 mm. in length and 7 mm. in its antero-posterior diameter.

Summary.—No. 40,618.—Male skull, with upper and lower third molars suppressed. No. 40,607.—Female skull, with one upper and both lower third molars suppressed. No. 40,620.—Male skull, with upper third molars suppressed. No. 40,614.—Male skull, with supernumerary lower left bicuspid. No. 40,611.—Female skull, with supernumerary lower right bicuspid.—*Dental Review, April, 1897.*

MICROSCOPICAL ASPECT OF CERTAIN LESIONS INDUCED BY DENTAL CARIES. By A. Hopewell Smith, L.R.C.P. Lond., M.R.C.S., L.D.S. Eng. Read before Odont. Society of Gt. Britain. In directing your attention for a brief space of time to-night to the consideration of the communication which has been announced, the subject will be approached from a somewhat different standpoint to that usually included under similar titles. Literally speaking, the study of local lesions induced by dental caries assumes vast proportions, and embraces numerous side issues. To the chief striking and important points of a patho-histological nature that are found in sections of carious teeth these remarks will be strictly confined; the main attempt being devoted to descriptions of specimens prepared by those decalcifying processes in which the hard and soft parts are retained in close anatomical relationship. As the majority of the pathological conditions met with in the mouth are due to causes which operate from the outside, only a few being produced by endogenetic disturbances, this paper will treat of some of the many conditions primarily brought about by extrinsic or purely dentinal changes.

It is extremely probable that morbid affections of Nasmyth's membrane and enamel per se (products of the stomodæl epiblast) have a certain influence on the subjacent tissues, but of this part of the subject we need not now speak. It is considering the variations that take place before and after carious penetration into the pulp-chamber with which we have here to deal. But caries is not the sole factor in the formation of calcareous masses in the pulp and on the walls of its cavity; traumatism, senile changes, and idiopathic conditions frequently share in its production.

It would save a great confusion of ideas if three kinds of dentinal deposition were generally recognized: (1) Calcareous degeneration of the pulp, a constant accompaniment of caries, but also found occasionally in sound teeth as the result of vascular changes due to idiopathic or constitutional causes. (2) Secondary dentin, occurring not only as a pathological process in cases of attrition, abrasion or fracture, but physiologically, as the result of senile changes in both permanent and long-retained deciduous teeth; and (3) Adventitious dentin, the product of caries. Salter's patient and remarkable investigations in this particular portion of dental pathology led him to classify all forms of dentin deposition as secondary dentin, and in a sense this was perfectly correct. But the term seems to require a more definite meaning, for he describes under this one heading three forms, viz., dentin of repair, dentin excrescence, and osteo-dentin or intrinsic calcification of the pulp.

The adjoining scheme is intended to show the chief results of pathological changes taking place in dentin and pulp of a tooth.

I. *Calcareous degeneration of Pulp*, through changes in pulp alone.	(*a*) Common. Due to vascular changes in pulp, in association with caries. (*b*) Rare. Due to idiopathic or constitutional changes, *e. g.*, gout.
II. *Secondary dentin in Pulp Cavity*, through changes in the primary dentin and pulp.	(*a*) Physiological. Due to senile conditions of both permanent and long-retained deciduous teeth. (*b*) Pathological. Due to attrition, abrasion, or fracture.
III. *Adventitious dentin in Pulp Cavity*, through changes in the primary dentin and pulp.	Due to caries.

Peripheral carious stimulation of the dentin is accompanied by destructive as well as constructive metamorphoses; tissue waste and tissue repair go on side by side. At first the soft parts alone suffer; the dentinal fibrils and their inclosing tubules, in parts of their courses, are affected and soon become disorganized, the blood-vessels and tissue of the pulp undergo hyperemic and other changes. Thus a superficial carious patch beneath the enamel is associated with marked cellular activity on the part of the pulp; while there is a loss of substance externally, there is a gain internally. This is exemplified in the formation under certain circumstances of "dentin of repair." In other words, caries, even in its early stages, usually leads to a deposit of new adventitious dentin on the surface of the pulp. But later on bacterial agencies multiply and accumulate, advancement renders them still more potent, and development means destruction. For now not only do the dentinal tubules and matrix also become involved in the general dissolution, but any adventitious tissues that may have been developed rapidly break down, and soon the work of demolition is complete. A study of these phenomena possesses several points of profound interest.

(A) *Conditions associated with Superficial Caries.* Viewed from a clinical aspect, it may be said that the commencement of caries is marked, as a rule, by one or two distinct types of lesions:

(1) the not uncommon clean-cut cavity which by its general appearance suggests erosion, and (2) the usual cavity of decay. The former is distinguished by its position on the cervical portion of the labial aspect of the anterior teeth, and by its intense hyperesthesia on receiving interrupted tactile impressions; the latter is recognized by its inability to transmit slight functional impulses to the pulp. Microscopically the difference between these two classes is well defined, the first named particularly presenting marked deviations from the usual type of decay.

(1) Here the sub-enamel region of the dentin contains not only the usual "granular layer," but also areas occupied by large interglobular spaces, which are distributed with more or less regularity throughout its substance. Microorganisms are present in enormous numbers at the margin of the cavity, and fill the tubules for varying distances. Opposite the breach of surface a corresponding deposit of adventitious dentin with enlarged irregular tubules is observed. The layer of tissue "on the borderland of calcification" is increased in thickness and exhibits a greater quantity of calcoglobular masses than normally. They are, however, very small. In the pulp, slight hyperemia and cell proliferation have certainly occurred in this locality and its neighborhood; and the peripheral cells, which present many of the appearances of the so-called odontoblasts, are multiplied greatly. Beyond, the tissues may be considered to be normal, with the exception perhaps of the smaller blood-vessels, whose lamina are more or less increased in size. Rounded cylindrical deposits of new dentin constantly exist in the central portions of the pulp, and point to a degenerative process. The changes from the normal to the pathological areas are very gradual, no sharp line of demarcation cutting them off from the other parts of the soft tissues.

Referring to the statement just enunciated that "the so-called odontoblasts are multiplied greatly," it must not be inferred that these cells are merely increased in point of numbers. They are profoundly modified, inasmuch as they now possess certain new characteristics. Their nuclei have become elongated and flattened, and are rendered very prominent when any of the nuclear stains have been used, and perhaps they are more granular than usual. The cell walls are indistinguishable, chiefly from the fact that each odontoblast is compressed laterally by its neighbors. In some instances they are gathered into sheaves. Some observers might describe the appearances as being due to an indirect splitting-up of the cells, and it is not difficult to conceive an odontoblast, when once fully formed, undergoing the process of karyokinesis. In sections prepared by Weil's method, microscopically the tubules in the primary dentin below the breach of surface are unaffected by stains and clearly differentiated from other tubules, and a band of altered pulp tissue extends right across that organ. Thus at the very outset we meet with two most remarkable conditions, and our attention is immediately arrested by their presence. These are the multiplication of the numbers of interglobular spaces, and also of the so-called odontoblast cells—phenomena which are entirely absent from all ordinary conditions. There would, therefore, seem to be some connection between the subjective symptoms of pain and these fresh developments—or at all events one of those fresh developments—and this leads one to the conclusion that the degree of the sensitiveness of these cavities is dependent chiefly on the increase or diminution in the numbers of the interglobular spaces.

Bodecker, in speaking of dentinal irritation in the case of ordinary caries, attributes the sensations of pain to "alternate contractions and expansions of living matter" in dentin and enamel, "conveyed from the periphery to the center of the tooth, these intense contractions being induced by highly irritating agencies." But it must be remembered that it is mechanical stimulation alone of the floor of these particular cavities that gives rise to pain; and we must infer, with greater accuracy in the light of our knowledge of the physiological stimulation of nerves and protoplasm generally, that the pathic disturbances are due here to direct impulses, which pass by means of the dentinal fibrils from the protoplasmic contents of the interglobular spaces to the ramifications of the sensory pulp nerves.

The occurrence of additions to the numbers of the long odontoblast pulp-cells does not admit of quite so easy an explanation, and on this question the opinions of those who have worked at this branch of the subject would be welcomed. The American author just quoted has indirectly noticed, although he has not figured this phenomenon. He says: "The first change in the affected pulp-tissue is its reduction to an embryonal or protoplasmic state"—a statement which is certainly not verified on examination of my own microscopic preparations. Further, he writes: "Should the lymph-tissue be reduced to its embryonal conditions as above indicated, the protoplasm present before transformation into basis-substance reappears, and *may break up into odontoblasts*, or into *osteoblasts*. In the former case, the result of irritation of the pulp-tissue will be *dentin*, in the latter *bone*." The method of thus interpreting the genesis of these lime-bearing cells is crude and illogical.

True bony formations are most rarely found in the tooth-pulp; such a case, however, has been recorded by Messrs. J. F. Colyer and Ackery, but calcareous deposits are exceedingly common. Compact osseous tissue consists of Haversian canals, concentric and intermediary lamellæ, lacunæ, and canaliculi, with blood-vessels, osteoblasts, connective tissue, branched bone corpuscles, and minute lymphatic systems. And if these component parts are non-existent, it is a mistake to pronounce the new formation bone. The local increase in the numbers of the odontoblasts may show that, in certain situations, there is a greater need for the higher and more sustained exercise of their functions, these functions, in my opinion, consisting wholly of shielding the delicate pulp from incoming dangers; not by the production of dentin matrix, but by physiologically creating a larger or more concentrated area of tropic influence or control—if one may so speak—on the surface of that organ, whereby its vitality may be retained until the latest possible moment; or it may be that the odontoblasts have merely undergone cell-subdivision. This is probably the correct view to hold.

(2) Turning, in the second place, to cases in which the dentin is well developed and free from irregularities, the subjective pain symptoms do not, as a rule, appear until there is almost penetration into the pulp-chamber, no matter how rapidly the carious encroachments may take place. But the pulp exhibits similar microscopical characteristics to those already detailed, the most obvious being cell proliferation and odontoblast multiplication with isolated cylindrical dentin formations in the neighborhood of the vessels. Regional hyperemia ("regional hyperemia" is a term used in this connection to denote a localized partial hyperemic condition of the blood-vessels. Thus one may speak of "coronal" or "cornual," "cervical," "radicular hyperemia"—according to its situation) is often present, that is the capillaries and blood-vessels are rather larger and have thinner walls than normal. Pain here is undoubtedly due to lateral pressure on the nerve bundles, the chief factors being the hyperemia

of the blood-vessels, the cellular infiltration of the tissues, and the presence of new dentin nodules. If inflammation supervenes, pain is greatly intensified by pressure on the pulp tissues of the serous exudation from the vessels. It is probable also that pathological changes occur in the axis-cylinders and sheaths of the nerve-fibers themselves. The present research has not yet investigated the changes in the pulp (if any) which may be associated with "zones of translucency" in the dentin, nor in cases in which the caries has undergone spontaneous arrest.

(B) *Conditions associated with Deep Caries.* When, however, caries has advanced as far as the formation of a deep and extensive cavity in the dentin, then fresh structures are seen and must now be described. The odontoblasts at the cervical region are enormously multiplied in point of numbers and layers. The cells themselves are not enlarged, but possess prominent oval nuclei which are much flattened laterally. Interposed here and there are small, hitherto undescribed translucent globules, structureless and non-laminated, but similar in other respects to tiny calcospherite spherules. These are seen at the dentin border between the cells, and sometimes in Weil's layer. At the juncture of the carious region with the primary or first-formed dentin, the latest deposited dentin has at its periphery the globular appearances observed during developmental periods. It takes anilin dyes more deeply than the normal dentin, from which it is highly differentiated. This new tissue may be called "adventitious" dentin—a term which includes several varieties to be hereafter noted. At the place where the carious tubules open into this freshly deposited layer the odontoblasts are considerably shrunken, and pressed inwards towards the pulp. They are disposed in one, or at most two layers, and their peripheral poles (dentinal fibrils) are greatly enlarged and swollen. The layer of Weil is most marked here. Micrococci and bacilli infect the newly formed tubes, and in some places expand them. And where tubular expansion has been effected, there the odontoblasts are absent, their places being occupied by a homogeneous mass of broken-down cells, with a few nuclei scattered about. Intense hyperemia is distinguished by enlargement and tortuosity of the capillaries and arterioles, their engorgement with blood, and emigration of leucocytes. As the thin sheet of adventitious dentin gradually widens out, the odontoblasts become elongated, remaining all the time in one layer, their fibrils, each with its individual enveloping tube, being of normal size, and stretching across the new dentin at fairly regular intervals. The cells themselves are sometimes gathered into sheaves. With the widening of the sheet of dentin they become smaller and shorter, and diminish rapidly in number until they disappear altogether.

Meanwhile the adventitious dentin presents the well-known appearance of areolation almost identical with that of the interglobular spaces. This areolar adventitious dentin is one of the most commonly recurring of varieties. The tubules which cross the spaces, sparingly filled with round and rod-shaped microorganisms, enlarge greatly as they extend inwards, and terminate with wide mouths at their pulpar extremities. This is probably caused by partial softening of the inter-tubular matrix. The structure of the pulp itself at this place is of the homogeneous character already noted. The dentin which fills the cornua of the pulp exhibits irregular formations, as if deposition had taken place in a hurried manner. Not only are nucleated cells with long processes imbedded in the hard mass, but large lacunal spaces are frequent, each containing micrococci which have entered via the tubules of the primary dentin. In some instances this cellular dentin resembles somewhat the structure of sponge.

A bacteriological survey of the same specimens of hyperemia and early stages of the lesions, which Rothmann has designated "partial acute pulpitis," furnishes one with some valuable particulars as to the probable distribution of the microorganisms in the pulp and surrounding tissue. Miller has isolated, cultivated and named the most important of the cocci and bacilli; here we have an opportunity of describing the probable routes of their invasion of the pulp itself. The microorganisms, after their introduction into the pulp cavity, are believed to make their way in chains, groups, or zooglia masses to the spaces between the odontoblast layer, the dento-genetic and ordinary pulp cells on the one side, and the border of dentin on the other; and also to the interpolar (interfibrillar) spaces, and the intercellular intervals. Thence they travel apparently to the basal layer of Weil, although here they are not congregated in such large or such numerous masses. Whatever their point of entrance, they soon pass to some considerable distance along the line of junction of the hard and soft tissues. Further, they are found in the substance of the pulp proper, chiefly arranged along the walls of the blood-vessels, in their interiors (when empty) and in the perivascular tissues. Infection of the nerve fasciculi most probably does not take place. The micrococci predominate largely over the rod-shaped organisms. The central and peripheral portions of the adventitious dentin are crammed with microorganisms, but when the odontoblast fibrils with their sheaths cross the areolations of this new deposit, no cocci can be found. From these investigations, therefore, it will be seen that, as a result, one is unable to coincide with Arkovy's theory of the phagocytic function of the odontoblasts. They certainly possess a granular appearance, but a search for any microorganisms which have become incorporated in the substance of their protoplasm or nuclei is attended with negative results.

If the course of the disease is progressive, inflammatory foci appear. These consist of proliferated connective tissue cells (macrophages), pulp cells, and mono- or poly-nuclear leucocytes which have escaped from the numerous enlarged capillaries, all having been attracted together by a kind of positive chemio-taxis. The foci are very pronounced, commence at first in one or both of the cornua of the pulp opposite the carious dentin, and as a rule ultimately suppurate and form localized abscesses. Rapid destruction of the pulp ensues, and the undermined dentin finally gives way in the majority of cases. Sometimes a certain amount of fibrification of the cells lying in the immediate vicinity of the abscess occurs, and what might be termed a rudimentary abscess sac is developed. We are led to believe that this specialization and grouping of spindle cells is not merely fortuitous, but a deliberate attempt on the part of the pulp to heal the lesion. The condition is observed in cases of chronic caries, the adventitious dentin being then deposited in layers, and presenting a characteristic fibrillar structure. On the borderline of the hard and soft part, the connective tissue structure of the dentin matrix is well brought out. Islands of dentin in the body of the pulp suggest that they are simply calcified bundles of connective tissue fibers mixed with cells; the process of formation being analogous to that of intra-membranous ossification of bone.

(C) *Conditions associated with Penetrating Caries.* Limitation of time affords these notes opportunity of speaking of no more than two phases of one of the commonest conditions found in the mouth, viz., idiopathic exposure of the pulp. In median sections of teeth affected by acute caries, which has terminated in total inflammation and partial suppuration of the pulp, it is obvious that the cells appear degenerate altogether. Connective tissue cells are broken down; the pulp cells have become changed into indifferent cells with large square nuclei, and escaped leucocytes crowd the tissues. Even the odontoblasts themselves at the cervical region are metamorphosed into short cells with rounded nuclei, and at the coronal part are opaque, and seem to have undergone fatty or mucoid degeneration. Finally, at the periphery of the pulp the small globular deposits already mentioned are found. The nerve bundles have lost their definite structure, and though retained in position are evidently less translucent and more disorganized. There are no clear evidences of fatty degeneration in the sections under notice, although Wedl describes this as existing in his sections of acute purulent pulpitis. The tissues are greatly condensed at the margins of the abscess cavity, the cells being short and fusiform, interlacing closely with each other. The blood-vessels are hyperemic, and micrococci and bacilli are abundantly distributed throughout the tissue.

The last condition which we shall now consider is that of a phase of acute partial suppurative inflammation of the pulp, in which that organ has been subjected to the devitalizing action of arsenious acid for a period of not less than twelve hours. In addition to appearances which denote the intensity of the inflammation—hyperemia, marked cellular infiltration, suppuration and other changes common to acute inflammation in soft tissues—a prominent feature is a large special form of dentinal deposit which is situated at the base of the carious opening into the pulp-chamber. It is irregularly rounded in shape. Its structure, in some places, is that of a more or less homogeneous matrix closely resembling that of hyaline cartilage, in other places it has a distinctly fibrous character. Distributed throughout, and with no attempt at uniformity of arrangement, are rounded or oval spaces containing one or more cells with large round nuclei. The cells vary considerably in size, those near the pulp side being six or eight times as large as the smaller ones near the dentin sides. Towards the pulp side rows of encapsuled cells exist, some being multi-nucleated. The surrounding pulp tissue in immediate association with the new deposit consists chiefly of fusiform cells arranged in bundles interspersed with small round cells, the former possessing oval, and the latter round nuclei. This particular form of cellular or hyaline adventitious dentin does not occur solely in acute inflammations of the pulp, it is also seen in chronic inflammation with hypertrophy (polypus) near the lower portion of the pulp cavity. In this case it may be accompanied by new dentin which has a pronounced laminar structure. In conclusion, a preliminary study of the patho-histology of these lesions leads one to the following deductions: (1) That nearly every degree of dentinal change is attended with hyperemia and cell proliferation in the pulp tissues, and generally speaking, the formation of adventitious dentin. (2) That the latter may have its origin as a conversion or secretion of the dento-genetic cells, producing on the one hand the areolar or laminar or hyaline varieties, when the formative cells alone happen to be concerned; on the other, the fibrillar or cellular forms when odontoblasts or connective tissue cells are by chance incorporated in the deposit. (3) That there are no proofs that the cells called odontoblasts take any part in the production of the matrix of the new dentins, the term being therefore a misnomer; and (4) That the new dentins, by a system of extension from the affected areas, may be just as much subjected to the peptonizing action of microorganisms as the primary dentin of the tooth.—*British Journal of Dental Science, May, 1897.*

THE LINGUAL TONSIL should be examined in instances of hemoptysis which are not explained by the state of the respiratory organs.—*The Laryngoscope.*

CANCER OF THE PHARYNX commences in 60 per cent of cases on the surface of the tonsils, and, as it causes little trouble in its early stages, is very apt to be overlooked.—*Watson Cheyne.*

BARBERS SHOULD BE COMPELLED TO BOIL THEIR INSTRUMENTS.—Why not? asks the *Union Med. du Canada*, commenting on a recent case of staphylococcus infection contracted by a physician in the barber's chair. Why should there not be a municipal regulation to that effect?

DISTINCTIONS BETWEEN HUMAN AND ANIMAL BLOOD.—On mixing the blood in question with a little bile, there are formed crystals not exceeding 0.003 metre in size. Those of man are right rectangular prisms; those of the horse, cubes; of the ox, rhombohedrons; of the sheep, rhombohedric tablets; of the dog, rectangular prisms; of the rabbit, tetrahedrons; of the squirrel, hexagonal tablets; of the mouse, octahedrons; of common poultry, cubes modified at their angles, etc.—*Scientific American.*

Letters.

REPLY BY DR. EDWARD C. KIRK.

PHILADELPHIA, June 20, 1897.

To the Editor of the Digest,

DEAR SIR:—I note in your May issue a criticism upon the editorial management of the *Dental Cosmos*, for what you deem an inconsistency with respect to its attitude in relation to plagiarism; and in defense of the charge which you make of editorial pilfering you cite a portion of a report which appeared in the *Cosmos*, wherein a method is given which had previously been described at length in the DIGEST. You also quote certain editorial statements from the *Cosmos* which seem to you to have a bearing upon the case in point.

The charge of plagiarism in this case must rest solely upon the similarity of the ideas presented, as the language in which they are set forth is in no degree similar. It could not be otherwise, for the reason that the wording of the *Cosmos* report is that of our reporter, who was present at the meeting and who had no knowledge of the prior publication of the same method in another journal. As a matter of fact, neither had the editor until after the *Cosmos* report was published. If, therefore, the case is one of plagiarism at all, the responsibility rests solely between the two gentlemen who have each given the same method to the profession through different channels.

As an editor you will doubtless agree that it is beyond the limits of editorial possibilities to establish questions of priority in all cases where ideas are offered for publication; even the patent office fails frequently in that regard; and you will easily see that the case in point is entirely different from the one which gave rise to the editorial in the *Dental Cosmos* for November, 1896, from which you quote, the difference being that in that case a verbatim literary steal was under criticism. Further, I may perhaps be permitted to add that there was no intention of casting any reflection upon your valued journal in the quotations which you have made and which, upon critically reading them from that viewpoint, I fear might have been an allowable inference.

Now with regard to your anonymous "Quaker" correspondent. The pathological condition manifested by his effusion is one which presents an interesting and somewhat complex clinical picture. A study of the symptoms, however, will enable anyone familiar with the disorder to at once recognize it as a case of *megalocephalitis*, that is to say, a chronic case of big-head, complicated with an intercurrent attack of sore-head. It is not, as has been suggested, a condition which would yield to a course of treatment with Lydia Pinkham's Famous Vegetable Compound, for the disease is quite incurable, running a chronic and very irregular course which invariably terminates fatally. EDWARD C. KIRK.

ECHOES FROM MISSOURI.

ST. LOUIS, MO., June 2, 1897.

To the Editor of the Digest,

DEAR SIR:—In compliance with my promise recently made to you, I will now try to give you a little news from our city. The St. Louis Dental Society held its regular meeting on June 1, and while the attendance was small the meeting was enjoyed by all present. One new member was elected and two recently elected signed the constitution. The most entertaining part of the program was a paper on "Pyorrhea Alveolaris," by Dr. Emma Eames Chase. The discussion of which, together with the question on the same subject submitted by the committee of American Dental Association, consumed the time of the society until adjournment.

It has been the custom of the St. Louis Dental Society heretofore to let the meetings for the months of July and August go by default, but the July meeting will be held this year, at which time the discussion of the remaining subjects submitted by the American will be taken up.

Just now the subject most talked of by the profession is the coming state meeting, and we are anticipating one of the best meetings in the history of the society. We extend an invitation to all of our professional brethren of Chicago.

As you are doubtless aware, "poor old Missouri" has at last succeeded in passing a dental law, creating a board of dental examiners. The governor has appointed the following gentlemen on the board: Dr. Ruby, for 5 years; Dr. Bartlett, 4 years; Dr. Burkhead, 3 years; Dr. Jenkins, 2 years, and Dr. H. S. Lowry, 1 year. These appointees will organize at once and be ready for business on June 20, at which time the law becomes effective. Certainly the governor should be congratulated on his appointments, for no more capable or worthy men could have been found in the state.

Yours fraternally, MISSOURI.

ST. LOUIS LETTER.

ST. LOUIS, June 19, 1897.

To the Editor of the Digest,

DEAR EDITOR:—The most important news I have to send you to-day is that it is uncomfortably warm in our city just now, and that we are all very busy getting patients ready to leave dentists out of their calculations for a few months. We now wonder how we ever lived through this busy, hot month before the day of electric fans, to say nothing of other comforts, such as electric motors for our engines, fountain spittoons and window screens, which all help to make the dental office endurable in hot weather.

We do not see much of the other dentists, but we did see "the only Mac" the other day, looking just as provokingly cool and fresh, all in lavender and white, as he does at the American in August. We must tell you where we saw him—for you will never guess—we found him at church last Sunday morning. Just as young as ever, too, for he was comparing fans with one of the young ladies in the vestibule, until her father ushered him into the front pew.

We are all envying our expert orthodontist, who soon sails to spend the summer in England. He made such a good impression when he was in London last year that the leading English dentists want him to come again and take charge of certain difficult cases for them. Many of us feel just a little uneasy about his trip this year, for having experienced the relief of being entirely free from these cases of orthodontia, we do not enjoy the prospect of being obliged to resume this part of practice, as we will be obliged to do in case our good friend is persuaded to remain in London.

While we still had visions of the briny deep, with England cool and green in the distance, here comes our cheerful (and persistent) treasurer of the St. Louis Dental Society, to tell us that he is going to California for the summer and will take his family with him. I mention this latter fact because dentists usually take their outings without their families.

We are all counting on the little outing we will have at the state meeting at Pertle Springs next month (July 6 to 9 inclusive). The committee promises us a good program, we are sure of as comfortable a place for our meetings as can be found in the state, a goodly proportion of the best men from all over the state always turn out for our state meeting, and some of the good fellows from the neighboring states always attend, while we are glad of such a good excuse to get out of town in July even for a few days. We hope you will send a large delegation from Chicago.

Our new dental law is about to go into effect (June 20), and while some of the kickers object to it because it is not perfect, there is a general feeling of satisfaction that we have made a start in the right direction. The editor of the *Western Dental Journal* voiced the sentiments of the majority of the best dentists of the state in his able editorial in the April number of that journal, as was shown by the vote of thanks for that expression sent the editor by the St. Louis Dental Society at their meeting in May.

At the June meeting of the society the first of the questions proposed for discussion by the committee of the American was taken up and discussed. Mrs. Emma Eames Chase gave a brief resume of the theories advanced and definitions given by our leading writers, and the subject was discussed by Drs. Prosser, Conrad, Bartlett, Fletcher, Kennerly and others. There was the usual difference of opinion concerning the curability of the disease; the usual statements of cures by some, and the customary doubts of such statements by others. Those who doubted were advised by Mrs. Chase that they were much more likely to see the failures of other dentists than the cures, and one should not base an opinion on that alone; and that since reputable men in the profession did say that the disease is curable, it was only fair to give them credit for curing some cases; and to go to work to find out how it could be done. Hoping to see you at Pertle Springs,

Yours truly, ST. LOUIS.

BALTIMORE LETTER.

BALTIMORE, June 16, 1897.

To the Editor of the Digest,

DEAR EDITOR:—Your kind invitation to drop a few notes is just a little more agreeable because you consent to let me make the noise from a position concealed. I am a shy bird and you must not tell anyone that my plumage is black and orange.

The business meeting of our State association was held Tuesday night last and it was pleasing to those interested in professional matters to note that the attendance was large. A few years ago it was hard to get a respectable number together at such a meeting. About a dozen new members were added to the roll, and these with other recent acquisitions will infuse new blood, which when mixed with the old stock we hope will produce a vigorous and sturdy association. Some of the officers elected were old stagers, but quite a number were untried men put forward by a clique, which has recently organized under the leadership of a gentleman who has developed a penchant for politics. Of those elected at least three—the two vice-presidents and the treasurer—were at the Old Point meeting (vice and money are sometimes associated here, too). The rest of the officers, especially the executive committee, will, we hope, be present at the next meeting, as it will probably be held in Baltimore, when we will have an opportunity to entertain our friends from Virginia and Washington.

A committee was appointed to secure a revision of our dental law. Maryland is one of the few states which as yet has not a perfect dental law. She has, however, a pretty clean record in examinations by the dental board, forty-two having been examined this year and forty-two passed and were licensed to practice. The examinations were oral and made to include for the first time graduates of Baltimore schools. Some of those examined say the questions were of a rather elementary character, so it is expected that the board is just trying its wings this year; next year we hope for written examinations and that the sieve will have a little closer mesh.

The applicants for right to practice medicine were not so fortunate as their dental brethren; out of ninety-seven applicants, fifty were rejected. The examinations were written and each applicant was required to sign a statement that he had not received nor given aid. In spite of this, it is reported that compends and even books as large as Gray's Anatomy were consulted freely; that men crawled on all-fours for several seats so as to exchange papers with friends; it is hinted that at least twenty-five men were involved in failure by this proceeding. Some of those thrown were honor men in recent classes of reputable colleges, and those interested are much disturbed by the matter. The medical colleges have always taken a lively interest in legislative procedures, and it is expected that some compromise will be effected, or an appeal will be made to the legislature for relief or modification of power. There may have been some hasty judgment in this wholesale slaughter, but the fact remains that a proportionately large per cent of those desiring to enter the medical profession were suspected of or detected in cheating.

It has been claimed, if not commonly believed, that professional men have a moral tone somewhat above that of the average business man—why? Is it because a better class of men aspire to these callings? In the light of this recent expose I hardly think so. Is it not rather that years of training with those who have acquired a deep and intimate sympathy with human nature enable them to imbibe some of the nobler and holier traits of human character—an argument for fraternity—or possibly a multiplied presence at the mounting of the pale horse may soften and repulse the brutal and criminal instincts of man's nature.

It would seem if practicable that all professional schools should make more of the teaching of ethics; some have claimed, I know, that the schools and teachers have nothing to do with the morals of students; but wherever the student goes he certainly represents his alma mater, and where a low moral tone prevails among the students the reflection is inevitable. With extension of the term of study, opportunity for time to be spent in ethical training and cultivation of the professional sense will not be lacking; indeed, I would make the signing of a code of ethics a condition of matriculation.

Dr. De Trey, of Basel, Switzerland, who cliniced at the New York Odontological Society last week, is expected in Baltimore, where he will probably give a clinic with the new form of plastic gold suggested by his father. More anon, OREOLE.

LETTER FROM THE NORTHWEST, AND CURSORY REPORT OF THE MEETING OF AMERICAN MEDICAL ASSOCIATION.

DULUTH, MINN., June 22, 1897.

To the Editor of the Digest,

DEAR DOCTOR:—Aboard the Journal Special, Chicago to Philadelphia in less than twenty-four hours, cool air; no dust; surrounded by friends, all happy and full of laughter; good stories and merry talk, assisted by complimentary contributions from Mumm & Co. and other manufacturers of good wines and liquors, which were dispensed freely to any who would so much as touch the button, "without money and without price." Yet, by reason of this very freedom, no excesses to mar the general pleasure. Such in brief was the journey from the West to the Golden Jubilee of the American Medical Association upon its fiftieth anniversary meeting.

As for the four days of regular session, probably no one ever saw so much hard scientific work and so much festivity within the space of ninety-six hours. Truly the spirit of the modern Quaker is easily moved, and his eye color blind, so far as the formally offensive vermillion is concerned; but these symptoms of latter-day degeneracy, so called, are more than offset by a royal hospitality and we see him in his glory as a host.

Lunches at the Union League Club, the hospitals, hotels and colleges. A choice of several every day, with dinners in proportion for the members; receptions in prominent places by eminent and hospitable people, including their ladies also; while the ladies of Philadelphia made up a program for the visitors of their sex that embraced every subject of interest in charming old Philadelphia, from trolley rides, art and literature to entertainment by the Colonial Dames, or golf and cricket clubs.

Atlantic City, not to be outdone, took charge of the visitors for a night and a day; board, lodging and everything of value or entertainment in that resting place for the weary by the sea was free to wearers of the button. Even "Streets of Cairo," and other Board-Walk shows opened wide their doors, and, as if to crown all other efforts in this lavish program, the Broad Street Theater, filled from pit to dome with doctors, their wives and lady friends, was indeed a sight never to be forgotten, while the happy reception given the artists chosen to entertain that vast company by Lea Brothers, whose guests the Association members were for that evening, must have fully gratified the highest expectations of all concerned.

Now to our friends the dentists and their section. In lieu of the customary section dinner the dentists of Philadelphia gave a banquet at the Continental Hotel, at which about sixty entertainers and their guests, with wine, wit and the good things for which their city has long been famous, passed the evening most pleasantly.

To enumerate the hosts would be like beginning to call the roll of honor of the dental profession. Who cannot name them? The toast-master, in political parlance the logical candidate, was Dr.

S. H. Guilford, who in his usual happy way introduced as speakers Drs. R. R. Andrews, of Cambridge, Mass., E. T. Darby, James Truman, Wilbur F. Litch and C. N. Peirce, of Philadelphia, E. S. Talbot and J. S. Marshall, of Chicago, G. F. Eames, of Boston, and George V. I. Brown, of Duluth.

What did our section do? It kept in point of attendance, scientific character of papers and interesting discussions, fully abreast with other sections, and was pronounced one of the best.

The paper of the chairman, Dr. R. R Andrews, touched upon the use of X-rays and other matters of interest, and brought as its central idea the importance of societies making a united effort to have municipalities require examination of mouths of school children, with a view to their treatment in the interest of general health.

Dr. W. G. A. Bonwill's paper contended that the laws of osmosis precluded the possibility of the passage of cocain through dentin, as is claimed by advocates of cataphoresis, and called attention to methods of his own in the management of patients.

Dr. Eames, of Boston, brought out lively discussion by touching upon the old-time topic—Relation of Medicine and Dentistry—which he, however, handled in an original and interesting manner.

Dr. G. Lennox Curtis, of New York, made a plea for conservative oral surgery, urging the preservation of periosteum whenever possible, and gave some interesting illustrations from his practice.

Dr. Talbot, of Chicago, read his paper, number four, on pyorrhea alveolaris in mercurial and lead poisoning and scurvy. An accompanying list of photo-micrographic illustrations added interest to a carefully prepared paper, and, needless to say, thorns were not removed from the brows of advocates of the uric acid diathesis theory.

Dr. Talbot also entertained the Stomatological Club of Philadelphia by a lecture on the stigmata of degeneracy, with stereoptican illustrations.

Dr. Wm. Knight's (of Cincinnati) paper upon tumors of the maxilla was one of absorbing interest, as were also a series of clinical cases along the same line by Vida A. Latham, of Chicago, with photo-micrographs showing sections of the growths described.

Dr. Geo. V. I. Brown, of Duluth, dwelt upon hyperkinesis of the muscles of mastication as a symptom and an etiological factor in nervous affections, particularly neuralgia of the trigeminus and diseases of the jaws.

Dr. Edward Branigan, of Boston, touched upon dental faculties in medical schools in a manner possible only to one of widespread experience in these institutions.

Dr. Geo. T. Carpenter, of Chicago, in addition to an interesting paper, presented photographs showing very excellent results from harelip operations.

Dr. W. E. Walker, of Pass Christian, Miss., advocated sterilized roots of beasts' teeth as supports for porcelain crowns.

Many papers full of interest it is impossible to notice as they deserve. Drs. Litch, Truman, Stellwagen, Peirce, Kirk and other Philadelphians took an active part in the discussions, while Drs. Marshall and Baldwin, of Chicago, Fletcher, of Cincinnati, Williams, of Boston, Gillette, of Newport, and other visitors gave ample expression to outside opinions.

The following officers were elected for the ensuing year: Dr. Geo. V. I. Brown, Duluth, chairman; Dr. E. S. Talbot, Chicago, secretary. Executive committee: Dr. J. L. Williams, Boston, Dr. M. H. Fletcher, Cincinnati, and Dr. A. E. Baldwin, Chicago.

The next meeting place decided upon was Denver, and all are cordially invited to taste of their truly Western hospitality.

Yours, etc., GEORGE V. I. BROWN.

NEW YORK LETTER.

NEW YORK, June 19, 1897.

To the Editor of the Digest,

MR. EDITOR:—We are disposed to emphasize the stirring events now occurring in New York, as regards the defeat of a bill to remedy the supposed evils of the prevailing system of conducting hospitals and dispensaries. This defeat has so aroused the ones favoring the bill that things are approaching white heat, this matter is so nearly akin to our interests. We predict that the wisdom which does in some measure abide in the minds of men will sooner or later find expression. We would like to reproduce the letters given to the public press, but they are too voluminous. The following, however, is a fair sample:

Dispensary Abuses a National Issue. A Physician Says the Movement for Needed Reform is Really International in Character, but Objects to the Retroactive and Unconstitutional Laws.—The Medical Charter bill, which Governor Black very properly refused to sign, would have given the State

Board of Charities Commissioners absolute authority in all matters pertaining to this vexed question; for instance, they would have the power to take away the charters of institutions already existing, well organized, equipped and carried on, and with sufficient monetary guarantees for the future, such institutions having been duly incorporated by act of the legislature. Such a measure would be retroactive, and retroactive laws belong to the Dark Ages. It would out-Herod Herod, to say nothing of interfering with constitutional right. And, as regards the creating of new hospitals, dispensaries and clinics, it would be under the absolute control of the board, and that savors of the star chamber again. Organization there ought to be. Granted. But let it be simply organization—a supervision of all such institutions by the State Board of Charities or other board or committee appointed partly by the state and partly by the city, whose duty it shall be to inspect all hospitals, dispensaries and clinics to see that they are properly carried on, that their financial condition is sound and that none but the poor be furnished medical advice and treatment gratis, pay wards and private rooms being set apart for those in better circumstances. This could be done, and it could even be pretty accurately ascertained in the great majority of cases whether applicants are really deserving or not, without going into a regular system of espionage.

This editorial of the New York *Herald* is so full of suggestion that we venture to insert it:

The Medical Charity Abuse.—The discussion of the question of the prevalent abuse of medical charity as connected with the dispensary system has brought out many interesting facts. From what we can learn both parties to the controversy—the medical staffs and the boards of management of these institutions—are equally to blame. The doctors, in their eagerness for clinical material, are inclined to treat all interesting cases indiscriminately, whether able to pay or not, and the managers are anxious on general business principles to make a good showing for the institutions under their charge.

No one doubts the fact that the majority of patients treated in the dispensaries are able to pay the physician a legitimate fee, and are consequently undeserving applicants. It is also true that the dispensaries are too numerous—are out of all proportion to the actual needs of the really poor patients, and are slowly and surely fostering a most dangerous form of pauperism. London is suffering from the latter condition and New York is falling into the line of its bad example.

The dispensary bill of Mr. Sullivan was well calculated to effect a compromise between the chief parties in the dispute, but its failure to become a law by the governor neglecting to affix his signature leaves the matter where it was before and renders nugatory the best directed efforts of judicious legislation. The medical profession was practically unanimous in favor of the bill, but the managerial boards offered their opposition to the curtailment of time-honored privileges.

In view of the present situation the proposition to place the control of the dispensary system in the hands of the State Board of Charities was worthy of a trial

The medical gentlemen in arms, and why not? So say some 3,000 medical practitioners; yet we think that the course pursued to secure legislation for the supposed grievances can bring about the results desired. We think very much the same question is involved as that which has created the vexed state of things between capital and labor—neither party is wholly right, and neither party wholly wrong. Too much power generates too much of what sooner or later becomes oppression. Charity in dispensing medical service can be regarded only as a righteous act. Now to undertake to remove the management from a judiciously selected body of medical men would be a very unrighteous act, and a gentleman of the standing of Dr. St. John De Roosa takes high ground in his stern defense. We see in the situation a feeling akin to what we mentioned in our last letter—a feeling of unrest generating among dental practitioners, which is laid at the doors of dental schools and the excessive legislation, creating, as it has, a spirit tending towards commerce at the expense of true professional dealings. This is manifested by the rapid increase of pretentious offices, which are encroaching on our leading thoroughfare, Broadway; previously they have been confined to the avenues east and west. In these places no names appear, but we are informed that the operators are readily secured from the graduating classes of the colleges. Is there any way out of such a dilemma? We do not see how the schools can keep their graduates from assimilating the commercial spirit, when the atmosphere is so fully charged with it.

Words have unfortunately been uttered and printed in our journals that have not had an elevating tendency. They may have been said thoughtlessly, but they have been said. "There is more money in other callings than ours," and discouraging remarks of varied nature. But in spite of this, not a few have heard of the incomes of practitioners of from three to twenty thousand dollars per year, and so many young and ambitious men seek a quicker road to fortune by a commercial manner of doing things. It has been truly said in defense of the present system of medical charities, that overeducation of students for practice now, more truly means undereducating of students in the past by easy-going ways of securing certificates. It is hoped by some that raising the standard will ultimately tend to decrease the inferior grade of practice and practitioners. It would seem that it should do so, but we fear not, for it has been shown by the past that cultivation tends to corruption, doubtless on the theory that "He that increaseth knowledge increaseth sorrow." It is from the center that man must ascend to higher grades of usefulness, not from the head.

To entertain for a moment any doubt that there have been and are now great evils directly traceable to undue influence in our schools is useless, and recently the press has shown the public that the large amount of smoke indicated some fire. Whether this fire is still smoldering and liable to again break out we know not. Rumors are afloat that all will be peaceful soon, for a new deal is on.

Have we men that are capable of doing justice to students over such a large field of instruction? Sooner or later the test will come to our associations and they will call a halt, for we cannot go on as we are. It will be the top against the bottom; surely neither can be right that permits the necessity of investigations, yet we must use all the charity possible, for it is the outcome of all growth. Never has there been such a call for wisdom.

We have had unparalleled advancement during the last thirty years. The beginnings of associated fraternal gatherings, which were of an unusual character, were fostered by that big-hearted man who carried all his followers with him in spite of themselves. Those of us who were in it know this. We gave our best bounteously. Some thought New York would never coalesce. Few of these changed their ideas, but the warm-hearted, large-brained Atkinson will live on in the years to come, and when the most of us are gone the younger practitioners will study the archives of this age and marvel that we built so well, even better than we knew. Time is the righteous judge of history, and credit will be placed at the door of him who does nobly and unselfishly.

We think there are decided indications of a move towards the organization of a new national body of dentists. We hear of it in and around "Greater New York," which of course includes not a little of New Jersey, certainly the dental part of it. It is not very difficult to note the trend of things among the hornets; just where they will hive may not be our province to predict, but that it will be early in the season admits of no dispute, and this before going South. Wisdom is in the higher altitudes, at least a good place for consultation and the counting of thumbs, so that they will be up at the right time. This movement is not going to be on regular "trade" lines.

This reminds us that reduction is in the air, and we are glad of it, if, as so much said, "the times are fearful." We notice ten-dollar shoes in the windows for three dollars. Rents are about the same—always too high for dentists—and as to clothes, full suits can be purchased for $6.75, so Uncle Russell says. Who could not live on Fifth avenue and dress well for that sum? We believe that if any class of men should dress well and in good taste, it is the dentists. Not a few of them carry along a dress-suit case in their journeyings, and they look well.

We give the following from the New York *Herald* of June 9:

> Judge Bookstaver Dismissed Miss Hughes' Suit against a Dental College.—She had sued for damages to several of her teeth, due entirely, she says, to clumsy work on the part of some student operative. Loss of her teeth entailed loss of clearness in articulation, she said, and, as she is an actress, she could not earn money.
>
> Experts testified that if the roots of two teeth were fastened together in what dentists call "ankylosis of the teeth," it is impossible to pull out one without extracting the other. Other experts testified that loss of teeth did not entail loss of voice or articulation.
>
> A juryman went to the college's counsel and whispered: "We would have decided against Miss Hughes. Why? Because people who have money enough not to go to an infirmary tempt danger in going there." Judge Bookstaver's decision was based, practically, on a similar idea. He said: "The printed notices on the walls of the college's reception-room, the printed notices on the cards which applicants for service receive, instinct and reason, agree in attributing to students, not professionals, the work done in a college of dentistry."
>
> Judge Bookstaver allowed costs and an extra amount to the college, making Miss Hughes' expenses for her suit about $300. Her friend, Miss Brazeel, said to her, "My dear, never mind. Soon, whether you lose or win your case on appeal, I shall sue the college. And the dentist who was the defendant's witness in your suit will be the plaintiff's in mine. He told me that the work which the college did for me was inexcusable."

The above can hardly be viewed in the light of a joke, although it has been testified to by so-called experts that the breaking and taking out of two teeth, instead of one, often occurs in the hands of skilled practitioners. What will the public say to such statements? Newspaper education flies at a rapid pace in these days. What is our redress? Why, combat it only by honest service every time, for "a pleased patient is the best 'ad.' one can have."

We have heard from a number of prominent medical men and others of Philadelphia that Dr. S. S. White's brain occupies a place in the museum of the Anthropological Society. Surely if any member of our fraternity had a brain he had, and more, a heart which had the control of it. We could detail not a little proof from personal experience. Dr. S. S. White had a history that will some day illuminate some of the dark shadows that hovered over him, which only a few of those truly familiar with the origin of them understand. Such is the legacy of every noble and generous life; without them we could not know the beauty of light and shade.

A special Dwinnelle clinic was held at the rooms of the Odontological Society June 15 and 16, for the demonstration of the "Solila Gold." Dr. Victor de Trey, of Basel, Switzerland, attended to the task in a very satisfactory manner, much to his credit as a skilled operator. He will be a unique attraction at the coming meetings of the summer, as he told us he comes for the purpose of giving an exhibit of the qualities of the gold. We are convinced that it is a very valuable addition to our calling. It has a decidedly plastic quality. Cordially, NEW YORK.

"MADAM, can I sell you this valuable book, 'What to Do Before the Physician Comes?'"

"No, sir; you don't catch me doing the work and then letting the doctor draw the pay."—*Iowa Med. Journal.*

FOOD OF THE ANCIENTS.—In the very ancient skulls of Egyptian mummies the teeth are generally found greatly worn on their masticating surfaces. This, together with the absence of decay, evidences the possessors must have lived on food that required a deal of mastication.—*Medical Age.*

DENTISTRY A VERY ANCIENT PROFESSION.—A floating clipping has reached us that Dr. Geist-Jacobi, of Frankfort, Germany, has written a history of dentistry from 3700 B. C. to the present time. According to this it is known that there were men practicing the profession of dentistry in Egypt at least 5,000 years ago.—*Jour. Am. Med. Assn.*

BUG IN THE EAR.—A daily newspaper report tells of a wonderful "operation" for the removal of a bug in the ear, with complete restoration of hearing. Dr. Burnett in a recent article (*Practitioner*) upon foreign bodies in the ear says much damage may be done by groping after foreign substances, especially when there is none present. No one but a specialist, he thinks, should ever attempt instrumental extraction. If a living insect has entered the ear, a few drops of sweet oil will smother it and it may then be syringed out with warm water. Syringing will also usually remove objects introduced by children. No hurry is demanded. Delay is better than rough handling. Death has occurred from unskillful endeavors. If larvæ of flies are present, as sometimes happens in the tropics, a drop or two of chloroform or ether will destroy them.—*Med. Record.*

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

POLITICS AND THE ILLINOIS STATE BOARD.

It has long been argued that politics should play no part in choosing the State Board of Dental Examiners, and this last appointment by Governor Tanner furnishes overwhelming evidence of the truth of this statement.

While we have no desire to criticise the appointees personally, and attach no blame to them for being on the board, as the honor may have come unsought, we cannot but deplore the Governor's choice. Only one of the five men, Dr. J. H. Smyser, is a member of a dental society. The letter-head of one member would debar him from membership. Three are comparatively recent graduates, and there is a doubt as to whether one has ever graduated from any dental college. They are men unknown to the profession in Illinois, as well as outside the state.

It seems hardly right and proper that such men should have the power to sit in judgment upon applicants for license to practice. Appointments of this kind serve only to bring the profession in Illinois, as well as the state board, into bad repute, and the standing of the entire dental profession is lowered thereby in the eyes of the community.

ANSWER TO THE DENTAL REVIEW'S CRITICISM.

The editor of the *Dental Review*, in the June number of that publication, takes us to task for printing papers read before the Chicago Dental Society, which appear at a later date in the *Review*, and endeavors to show that we are inconsistent when we accuse other dental journals of plagiarism.

To quote from this editorial: "The DIGEST itself secured a copy of the paper from Dr. Freeman and published the article without authority or privilege, and in face of the stipulated rule of the Chicago Dental Society that papers read before it shall be published in the *Dental Review*, etc." The "stipulated rule," enacted Dec. 7, 1886, says that "The *Dental Review* and any other respectable journal may have the privilege of making a report of the society's proceedings for publication." We published these papers because there was so much of value in them that we thought the profession outside of Cook County should have the benefit of it.

We were not aware that the Chicago Dental Society was run in the interest of the *Dental Review*, or that papers were read and discussed before it to fill the pages of that journal, however much in need it may be of such matter. In fact, we did not suppose that the society was conducted to keep alive any dental journal, much less the catalogue for a dental supply house, under which head the *Dental Review* must come, since over half the advertisements in its June issue are those of the dental supply house by which it is published.

The *Dental Review* has fallen down and been left behind, and instead of endeavoring to keep up with the progress of the times, it is engaged in the ridiculous and undignified task of publicly rubbing the sore spot.

AMERICAN DENTAL ASSOCIATION.

We would urge all who can possibly do so to attend the meeting of the American at Old Point Comfort, Va., beginning Tuesday, August 3, 1897. The railroad arrangements have been completed, and all passenger associations except the Western have given a rate of a fare and a third for nine days. The Southern has made a rate of one fare. These rates are of course on the certificate plan and a receipt must be taken when ticket is bought.

The new hotel, the Chamberlin, is well suited for our purpose. All meetings will be held in the dancing-hall, and there are large rooms on the same floor for committee meetings. A rate of $2.50 per day for each guest has been made.

An interesting feature of the meeting will be the collection of comparative dental anatomy, which will be shown in the section of Anatomy, Pathology and Surgery. It will include specimens, skulls and skeletons in all the classes, orders, and most of the species of the Vertebrates, and very many of the Invertebrates. Also a large number of fossil dentitions, including those of birds of the Tertiary Age, the Reptilia of Mesozoic time, and Fishes of the Devonian Age. It will be especially rich in specimens of Homo, and will include many pathological specimens, both of man and the lower animals. The exhibit will fill a large room and will probably be the finest ever gotten together. It will do great credit to the Association and to those who have assembled it.

QUESTION OF PROCESS PATENTS.

Regarding the discussion of the subject of "Process Patents," and the somewhat extended paper appearing in the editorial pages in the June number of *Items of Interest*, over the signature of Rodrigues Ottolengui, formulating a certain proposition which is syllabused as follows: "The profession should now unite in a request to congress for the passage of a law prohibiting the granting of any patent upon any method or process of treating or curing human diseases or ailments"—and the complimentary reference to the opinion of the chairman of the Dental Protective Association, and prominence given to such opinion relating to this subject, we desire to briefly reply thereto, more by way of explanation than of contradiction.

The question of process patents, so far as mechanical processes are concerned, has recently been definitely decided in this country by the Supreme Court of the United States, that court having put an end to the legality and validity of all patents upon mechanical processes in all the arts and industries, which, of course, would relate to any mechanical process patent having any reference to the practice of dentistry. This case is known as the Risdon-Medart case and is reported in the 158 U. S. 72.

We quote from the decision of that learned jurist, Judge Wheeler, given on the Low Bridge patent, and published in full in the April, 1896, issue of the DIGEST. He says: "When the method, and not the operating parts, is what is invented, that, of course, is what is to be patented. Here the natural teeth belong to the wearer, and are to be operated upon; they are not made by the inventor to operate, and cannot be brought within the patent."

The sentiment of the editorial is undoubtedly correct. There are now and have been for generations past, three learned professions, briefly identified as divinity, law and medicine. Closely following the learned profession of medicine is that of dentistry, which in late years, by means of the colleges and wide literature, and long years of study and preparation for its practice, has, as a matter of fact, risen to the dignity of one of the learned professions.

Patents are not taken out in this country relating to the evangelization of the earth, or the salvation of souls, neither regarding the practice of law, and but few patents have ever been taken out, to our knowledge, and asserted in the courts relating to the amelioration of human suffering or prolongation of vital forces. Charlatans, professing to represent the profession of medicine, have, of course, taken out patents; but they are charlatans, are known as such, and but few of them can exhibit the necessary credentials which authorize them to apply the title of M.D. to their signatures.

It would seem to us that correct results could be arrived at, from the standpoint of conditions and not theories, by a congressional enactment to the effect that no member of the medical or dental profession shall be liable as a *user* for the infringement of any patent. That is, exempt physicians and dentists from liability of any character or description from the use of any mechanical device in the practice of their profession, or from the use of any composition of matter protected by a process patent in their practice.

The law, as it now stands, permits the owner of a patent to sue a manufacturer, a seller or a user of the patented device or composition; and much, if not all of the evils, harrassments and annoyances of the dental profession would disappear if the dentists were exempt, as users and producers, from suits or claims upon patents, where they are users by purchase of the article, or users of articles which they themselves make, in connection with and in aid of the practice of their profession.

Such a law, we believe, would be construed by the courts so broadly as to permit a dentist not only to use and to manufacture for use those appliances or compositions which he deems essential to the most successful practice of his profession, and the alleviation of pain or suffering to his patient, but would permit him to select some third party to make the particular device or composition which he desired to use, and not compel him to the actual personal manual production of the same.

Book Reviews.

COMPEND OF DENTAL PATHOLOGY AND THERAPEUTICS. By Henry H. Burchard, M.D., D.D.S. Special Lecturer upon Dental Pathology and Therapeutics, Philadelphia Dental College. Publishers: The S. S. White Dental Mfg. Co., 1896.

This little book, evidently prepared originally for the students of the Philadelphia Dental College, is presented to the public with a view to aid students in general. As a rule, it may be stated that the value of a quiz book is questionable. There is always afforded to the mediocre student an opportunity to cram a condensed mass of statements which, too frequently, are memorized in a parrot-like form. If any work can be made an exception to this objection, it is this book of Dr. Burchard's. No higher praise can be given than to say that it is up to date from the first to the last page. It is a systematic, succinct and scholarly production. To the real student its value is unquestioned, even though it may become a temptation to those whose sole efforts are concentrated in obtaining their degree with the least amount of study. It has, however, another field of usefulness which should not be overlooked. Every teacher in a dental school will find this little volume of inestimable value, and this alone warrants its publication.—*Items of Interest.*

*   *   *

A PRACTICAL TREATISE ON ARTIFICIAL CROWN AND BRIDGE WORK. By George Evans. Lecturer on Crown and Bridge Work in the Baltimore College of Dental Surgery, Etc., Etc., Etc. Fifth edition, revised, with 625 illustrations. Philadelphia: The S. S. White Dental Manufacturing Co., 1896.

It is a work of supererogation to say anything commendatory of "Evans' Crown and Bridge Work." The fact that in eight years five editions have been called for is testimony sufficient as to its popularity. Although a kind of oral jewelry eraze has seized upon dentists, and everyone, competent and incompetent, educated and uneducated, trained and untrained, has alike been busy in cutting away good natural teeth for the purpose of putting in crowns and bridges, too often inserted in defiance of all natural laws and upon roots in the worst pathological condition, and although there has been a wild demand for any kind of instruction upon the subject, no rival to this book has yet appeared. It is sufficient, and there is no demand for anything further. The present edition has been carefully revised, and all the new methods are explained and illustrated. It has been condensed in some places and amplified in others, and the whole arranged harmoniously, forming a complete system of instruction.—*Dental Practitioner and Advertiser.*

Notices.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

Dr. R. G. Richter and Dr. W. H. Carson, both of Milwaukee, have been elected respectively president and secretary of the Wisconsin State Board of Dental Examiners. All communications should be sent to Dr. W. H. Carson, Sec'y, 128 Wisconsin street, Milwaukee.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The members of the state board recently appointed by the Governor met at Springfield June 11, 1897, for the purpose of organization. Dr. W. C. Jocelyn, of Cairo, was elected president, and Dr. J. H. Smyser, of Chicago, secretary. The next regular meeting will be held in September at Springfield.

J. H. Smyser, Sec'y.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

This body will meet at Hygeia Hotel, Old Point Comfort, Va., Friday, July 30, 1897, at 10 a. m. The executive committee will meet at 9 a. m. Thursday, July 29; persons having business with this committee will please present their papers at the first session.

Jonathan Taft, Chairman Ex. Com.
B. Holly Smith, Sec'y.

DENTAL DEPARTMENT, WESTERN RESERVE UNIVERSITY.

The annual commencement of the Western Reserve University Dental College occurred May 17, 1897, at Association Hall, Cleveland, O. Livingston Taylor, D.D., delivered an address entitled "Home Thrusts." President Charles F. Thwing, D.D., conferred the degrees upon thirty-one graduates. There were eighty-six in attendance, an increase of 62 per cent in numbers over last year.

SOUTHERN DENTAL ASSOCIATION.

The Southern Dental Association will hold its twenty-eighth annual meeting at Old Point Comfort, Va., August 3-6, 1897. Headquarters at the Hygeia Hotel. A fine program is being prepared and all members are urgently requested to be present, more especially as the next meeting will doubtless be one of the most important in the history of the Association, since the question of consolidation with the American will be settled.

S. W. Foster, Recording Secretary.

WISCONSIN STATE DENTAL SOCIETY.

The twenty-seventh annual meeting of this society will be held in the Senate Chambers at Madison, Wis., July 20-22, 1897.

The State Board of Dental Examiners will meet at the same time and place for the purpose of examining candidates for license to practice dentistry.

The Monona Lake Assembly will be held during the same time, thus securing reduced rates of one-fare-and-a-third on all roads.

W. H. Carson, Sec'y, 128 Wisconsin St., Milwaukee.

NEW JERSEY STATE DENTAL SOCIETY.

The twenty-seventh annual meeting will be held in the Grand Atlantic Hotel, Atlantic City, commencing on Wednesday morning, July 21, 1897, and continue in session two days. Seventeen papers by eminent men will be read upon interesting topics pertaining to the profession. Clinics of every description have been provided; four large rooms on the ground floor available for exhibits, with a 110-volt current for electrical exhibits. Hotel rates, $2.50 per day up. Accommodations for seven hundred guests.

Friends from the West and East contemplating attending the American Dental Association will be able to attend this meeting and take the Old Dominion line of steamers from New York, Thursday July 29, at 3 p. m., at an excursion rate of $11.20; or the Pennsylvania railroad, rate of one and one-third fare.

CHARLES A. MEEKER, D.D.S., Secretary,
29 Fulton street, Newark, N. J.

LIST OF LATEST DENTAL PATENTS.

582,731. Frank Fourt, Fairfield, Iowa. Dental Articulator.
582,796. Charles J. Peterson, Dubuque, Iowa. Dental Mandrel.
582,872. Eugen Muller, Waedensweil, Switzerland. Apparatus for Forming Gold Crowns for Teeth.
583,307. Isaac B. Kleinert, New York City. Dental Rubber.
583,472. Henry Heath, Jr., Brooklyn, N. Y. Dental Disk Mandrel.
583,565. Cassius M. Carr, Los Angeles, Cal. Dental Bridgework.
583,625. Comegys C. and J. Lusby, Philadelphia, Pa. Dental Handpiece.
583,735. Carroll W. Dodge, Worcester, Mass. Dental Polishing Disk.
583,848. Robert A. Dunlap, Carrollton, Ohio. Dental Impression Cup.
584,345. Abraham L. and B. F. Gilmer, Quincy, Ill. Artificial Denture.

PACIFIC COAST DENTAL CONGRESS.

The time for the meeting of this congress has been changed from August 17 to July 13, 1897 (continuing four days), so as to give delegates from the East and elsewhere a chance to take advantage of the extremely low rates of fare offered to the Christian Endeavor visitors.

Our congress will meet the week following the Endeavor convention; and as the rates are open to all, and cover a period of several weeks, it will be an excellent opportunity for the profession to visit San Francisco.

As chairman of the invitation committee, I desire to extend a hearty invitation to the members of the dental profession to join us in this meeting, which we hope to make a grand success W. Z. KING,

Chairman Invitation and Membership Committee, 1001 Valencia street, San Francisco, Cal.

TIME-TABLE OF TRAINS TO OLD POINT COMFORT.

Trains on the Pennsylvania Railroad leave and arrive as follows:

Leave Chicago 10:30 a. m., arrive Baltimore 12:40 p. m., arrive Washington 1:42 p. m.

Leave Chicago 3:00 p. m., arrive Baltimore 6:00 p. m.

Leave Chicago 5:30 p. m., arrive Baltimore 4:15 p. m.. arrive Washington 5:32 p. m.

Boats leave Baltimore, via Bay Line, 7:00 p. m., and Washington, via N. & W. D. C. S. S. Co., 7:00 p. m., arriving Old Point Comfort 7:30 a. m.

Leave Chicago 10:30 a. m., arrive Philadelphia 12:50 p. m.

Leave Chicago 3:00 p. m., arrive Philadelphia 5:47 p. m.

Leave Chicago 5:30 p. m., arrive Philadelphia 4:17 p. m.

Leave Philadelphia 11:10 p. m., arrive Old Point Comfort 8:00 a. m.

It will be seen that those taking this route can go by way of Baltimore, Washington, or Philadelphia, as the fare-and-one-third rate can be obtained for any of these points. For further information address, City Passenger Agent, Pennsylvania Railroad, 248 Clark St., Chicago.

RESOLUTIONS IN MEMORY OF DR. FRANK ABBOTT.

At a special meeting of the Alumni Association of the New York College of Dentistry, held April 29, 1897, the following preamble and resolutions were unanimously adopted:

Whereas, in the wisdom of an all-wise Providence the Alumni Association of the New York College of Dentistry is called upon to mourn the loss by death of our late professor and dean, Frank Abbott, M. D.; therefore be it

Resolved, That the death of our late professor and friend calls for an expression of esteem for one whose character was above reproach, whose undeviating justice and loving kindness to all with whom he came in contact leave impressions that cannot be effaced, and whose power for good, both in and outside his profession, was immeasurable. One of the brightest lights of our profession has been snuffed out, but its influence—pure and strong—cannot be extinguished while dentistry lasts.

Resolved, That this preamble and resolutions be placed in full upon the minutes, and that a copy suitably engrossed be presented to his bereaved family, for whom we feel the sincerest sympathy.

Committee { W. D. TENISON,
B. C. NASH,
M. C. GOTTSCHALDT.

MEMORANDUM.—Professor Frank Abbott, M. D., born Sept. 5, 1836; died April 20, 1897. College of Dentistry, clinical instructor, 1866-8; established infirmary, 1867; superintendent of infirmary, 1867; professor and trustee, 1868; dean, 1869.

News Summary.

FIRE IN A TALL BUILDING.—A fire, started by crossed electric wires, occurred in the office of Dr. Welch, on the ninth floor of the Champlain Bldg., Chicago, June 26, 1897, and caused $500 damage. The firemen had much difficulty in getting the hose up the stairs, and finally put out the fire with chemical extinguishers.

TO INSULATE ELECTRODES.—First make a solution of shellac in alcohol, having the consistency of glycerin. Spread this over the electrode, leaving about one-quarter inch of the point uncovered, and drive off the alcohol over a bunsen without burning. The shellac will fuse and leave a hard glossy coating.—*Dental Record.*

INTERESTING CASE OF MEMBRANOUS STOMATITIS.—The patient, a man aged about 20, had been sent to the hospital, suffering from supposed diphtheria. The membrane was not symmetrical, but was confined entirely to the left side of the mouth, covering the hinder portion of the left border of the tongue, the gum around the lower molar teeth, and the tonsil. The case being unusual, careful bacteriological examinations were made, but in no instance was the Klebs-Loeffler bacillus found. After the patient had been in hospital one or two days it was discovered that he had an abscess in connection with one of his lower molars. The offending tooth was removed, and from that time the membrane began to clear up, and soon disappeared. —*Mr. Stanley Colyer, in Jour. Brit. Dent. Assn.*

WISDOM TOOTH AND CRIME.—Darwin has told us that the absence of the wisdom tooth is a sign of civilization, but according to the *Dental Practitioner* Dr. Mario Carrara, of Turin, assistant to Professor Lombroso, has studied the development of the third molar tooth in the criminal, and, in the report made to the Royal Academy of Turin, comes to the conclusion that absence of the wisdom tooth is also a characteristic of the criminal. According to Carrara, in the normal man the third molar is found oftener than in the criminal. He also reports the result of his studies made on sixty-seven craniums of criminals which belong to the Lombroso collection, and he says that 31.3 per cent of them have no third molars. If we thought that wrongdoing would prevent our wisdom teeth from erupting we think it would be an incentive to crime among some of us.

HYDROCYANIC ACID AN ANTIDOTE TO CHLOROFORM.—Mr. Frederick Hobday, of London, having observed that the respiratory center was usually paralyzed first when death occurred during chloroform anesthesia, thought that hydrocyanic acid might prove of service as an antidote where the breathing was becoming shallow and weak, on account of the rapid and powerful temporary exciting effect this drug exerts on the respiratory center. He administered hydrocyanic acid successfully in thirty-one cases of chloroform poisoning in animals, mostly dogs, though some were cats, and the list includes also one calf, one sheep and one horse; the cases were those in which during anesthesia the breathing either stopped suddenly or became gradually slower. The hydrocyanic acid was administered in some cases hypodermically, in others was placed on the tongue. The good result was generally manifest in a very short time—half a minute to two or three minutes —the respirations being resumed and becoming strong and regular. In some of the cases, owing to the dose of hydrocyanic acid being rather large, the breathing became labored, when the administration of chloroform was resumed, so that a balance could be kept up between the toxic effects of the two drugs. These observations lead to the conclusion that hydrocyanic acid is of value as an antidote to chloroform, its beneficial effects being due to its property (when given in certain doses) of rapidly and violently stimulating and exciting temporarily the respiratory and cardiac centers, and so counteracting the depressant and paralyzing effects. The drug should be placed on the back of the tongue or injected hypodermically. In all his cases Scheele's acid was used, and he prefers it to the B. P. acid on account of its greater strength and consequent rapidity of action. For animals he considers one minim of Scheele's acid for every seven or eight pounds of body weight to be a fair amount. It is well not to be too anxious to administer a second dose till perfectly sure the first has been futile.—*Medical Chronicle.*

The Dental Digest.

Vol. III. CHICAGO, JULY, 1897. No. 7.

Original Contributions.

CONTOUR FILLING.

By W. E. Grant, D.D.S., Louisville, Ky. Read at Falls City Dental Club, Jan. 16, 1897.

Much in years past has been said, and even at the present day controversies are frequently heard as to the advisability of contour filling, the preservation of the interdental space, etc. Like many other disputes in dentistry and in medicine, there is some virtue in the opinions and ideas of those who cling with great tenacity to their views on these subjects. But it remains for each to decide whether or not he will accept and endeavor to accomplish the modes and principles suggested and outlined for us by the advocates of contour filling, or will be satisfied with the feeling that anything is good enough so long as it stays in place and the patient suffers no pain.

If we are to accept our profession as one of science and art we should endeavor to uphold the principles suggested in these words. As to art, it seems that many of us fall short in this point of professional acquirement in a number of different ways, but none more to the disgrace of true art than in the lack of contour filling. The word contour means the outline, so if we are to do contour work we are to outline the original figure or shape of the particular tooth to be filled. Perfect approximation and many other minor details are questions to be decided on the moment.

It is the duty of our profession to supply natural means as much as possible; let us therefore decide that contour filling is to be performed—how to do it can be considered later. Perfect regularity and absolute uniformity in the teeth are not necessary to advance or beautify the expression of the face, for a slight irregularity will sometimes add to the attractiveness of the appearance; still as a general rule it is our duty to replace that portion which has been lost through the ravages of decay. This may be accomplished with many of the filling materials at hand, but for permanency we must rely upon the amalgams and gold.

Having decided that a certain filling is necessary the question then arises—shall we prepare and fill the cavity half full of material, or fill it flat with its edges, or extend the filling until we have the original apposition and outline. This seems to be a simple question and one which ought to satisfy the mind of any inquirer as to the proper course of procedure. If we are to replace that which is lost by decay, why not do it completely and with an artistic eye? The old adage, "Things that are worth doing at all are worth doing well," applies here as well as elsewhere. In addition to the truth of this statement we are professionally and sincerely bound to do the very best for our patients, for they have intrusted themselves to our judgment and honesty, and if after cutting a third and nearly half of the tooth structure away we put in a filling which barely extends to the edges of the cavity, we have willfully robbed them of the service of half the tooth and also left a harbor for food which is bound by its own tendency to lodge in these openings and remain there. I often liken these openings to the old willow stripper—open at the top and the further down you carry materials the tighter they pack in.

These are some of the inconveniences to which patients are subjected, but we must yet consider one of the most important features of all, which of course is especially noticeable in the anterior teeth, and that is their unsightly appearance. No part of the human anatomy is more exposed to even a casual observer, and certainly no other portion adds more to the expression than does this one. There is harmony in nature and consequently there is harmony in variety, so we must employ an artistic judgment. It is necessary that we harmonize the outline of these anterior teeth and also that we consider the facial expression. The dentist who fails to consider the artistic part of his profession falls short of his calling. Nothing can mar the appearance so much, and so completely unbalance the entire expression of the face, as cutting several of the anterior teeth to less than half their natural size and then filling them without any regard to their original outline, reminding one of stopping the holes in a log house with mud. Even though the patients are compelled to submit to the loss of more time and greater pain, these things are forgotten. They are willing to pay more for services rendered, since they and each of us should want the most satisfactory result.

As previously stated, I shall not consider the various different modes of preparing for these operations, nor the special detail features to be observed in accomplishing them, since they are of minor importance and naturally suggest themselves.

LIGHT ARTIFICIAL DENTURE.

BY E. L. LANE, D.D.S., PORTLAND, ORE.

On page 696 of the December, 1896, number of the DIGEST there is described a method of making light artificial dentures, to which I would suggest an improvement which I have been using for four years. If instead of using lead-foil, the operator will use for the first and last sheets of metal ordinary tin-foil, such as is used for filling, he will get a smoother surface without the bother of using the mercury, and in consequence will save that time. Also on the outside of the rim, if the case is nicely waxed up and a sheet of heavy tin-foil burnished on the wax before casing up, it saves a great deal of scraping after plate is taken from flask. Of course this piece of foil must be nicely burnished around each tooth, and then the case must be flasked high, so that the foil will come away in the same side with the teeth. Now if in addition to the above one uses, as in my practice, about four or five thin coats of aluminoid, giving plenty of time between the coats for each to get thoroughly rid of the chloroform, he gets the thinnest and handsomest plate I have ever seen made of rubber, and a very strong plate as well.

SOME PEOPLE'S IDEA OF DENTISTRY.

BY MISS ELIZABETH HARRISON, CHICAGO.

We have lately settled ourselves in a temporary home among the foothills of the Sierra Madre mountains, and have made calls upon our neighbors living on the adjoining heights. In such expeditions we have met with some new and unique views of life and its necessities.

One day we climbed up to an abode perched high on the craggy edge of the 'arroya.' The door stood wide open, the usual custom in these Southern California ranch houses, and as we approached we were met by a tall, gaunt woman, clad in a calico gown, who came forward, pushing into place a set of false teeth. It was evidently a somewhat difficult and unaccustomed job, so we waited on the threshold until the adjustment was made to her satisfaction.

Then taking a long breath she said, "Be you the new city folks?" We answered that we had taken a house for the season, and she continued, "I 'lowed as much when I seed you comin'. I aint fixed up, but I thought I would git in my teeth anyhow." We assured her that it was quite unnecessary, as we were harmless, but she went on, "Up in Arazony I didn't haf ter wear 'em, but down here folks fix up so that I allers put 'em in when I go to town or know I'm goin' to see city folks." This last with another vigorous push to the somewhat refractory plate, which seemed disinclined to remain in place.

By this time her husband had shambled up behind her and stood watching the operation. "Pshaw! Sara," said he with a tinge of irritability in his tone, "what's the use of puttin' yer teeth in, anyhow? 'Taint natteral; 'twasn't ever intended when folks lost their teeth ter have other ones put in." Then turning to us he continued, on evidently an old theme, "'Twouldn't be natteral to nail a stick on ter a tree when the limb drapped off, and 'taint natteral to be puttin' on false teeth when yer own drap out."

COLLEGES AND STUDENTS' OUTFITS.

By A. H. Butterfield, D.D.S., Stamford, N. Y.

In my opinion the colleges could do more for their students, and incidentally for a long-suffering public, if more attention were paid to the outfit selected by their students. A look through the operating-case of the average student will convince anyone of the need of thorough supervision in this important particular. I do not know how the matter is conducted in all colleges, but I know that in some colleges little or no attention is paid to this matter, and the instruments found in many students' outfits would draw tones of anguish from a saw. I would not advise anything so radical as to insist upon uniformity of instruments in students' hands, but suggestions offered by a skilled and careful operator would work wonders in imparting knowledge of the adaptability of certain instruments to certain operations, and with their proper use would come skill.

As some colleges are now conducted, the chance of a student's gaining proficiency in operating is very limited. They have catalogued in their yearly announcement a large staff of well-known operators; this leads the prospective student to imagine he is to be in good hands, but he finds that these men seldom or never are seen in the operating-room. The only practical instruction—if it may be called such—is by a few men who have recently graduated from the same school, with precisely the same source of instruction, and in cases within my own knowledge, men who could not do a fair piece of work themselves. In fact, in the majority of cases students ask and accept instruction from one another.

Skill cannot be attained by perusal of books, nor from the closest attention paid to the most brilliant lecturer. If the average student were given the opportunity of supervision by a competent man, who would offer suggestions, criticise and point out errors of judgment, he would be in a better way to successfully enter a remunerative practice upon graduating.

A dentist with a head full of theory, but no operative skill, is unable to do good work. He cannot save teeth nor retain the confidence of the public. On the other hand, a man with little knowledge of theory, but possessed of operative skill, can and does save teeth. Theory without the means of application never can and never will accomplish anything. Blessed indeed is the man who is possessed of a reasonable amount of both theory and operative skill.

I regard the lengthening of the student's time in college as a very wise measure, but I can see no virtue in the addition of time unless there be a radical change in the method of instruction as regards the opportunity to clinic.

I do not see the justice of taking a man's money and three or four years of his life, promising to teach him dentistry, and them simply to stuff him with theory and send him forth to prey upon the confidence of the public until he gains a certain amount of skill or, finding that he knows nothing of the technical branch of his profession, is starved into taking up some other means of gaining a livelihood. If a young man is to be put into the way of success in our profession, technical skill must be as firmly wedded to theory as capital is to labor.

TO REMOVE IODIN SPOTS.—A solution of hyposulphite of sodium in water will remove iodin spots from linen, cloth, skin, in fact from everything, almost instantly. The fresher the spots the quicker the action of the hyposulphite.—*J. C. Emmering.*

Digests.

A FEW CONSIDERATIONS IN THE MANAGEMENT OF PROXIMAL CAVITIES IN MOLARS AND BICUSPIDS. By Dr. C. N. Johnson, Chicago. Read at Kansas State Dental Association, May 3, 1897. It may be laid down as a rule, subject only to the rarest exceptions, that when decay occurs on the proximal surface of a molar or bicuspid the proper preparation of the cavity involves an extension through to the occlusal surface, even when this wall has not already broken down. One of the principal exceptions relates to a mesial cavity facing an open space caused by loss of the proximating tooth. A small cavity of this class, having a strong occlusal wall, may be filled without such extension. Another case is where the gum recedes in old age and decay begins at the neck of the tooth, leaving the occlusal half of the surface intact. A cavity like this may often be approached from the buccal aspect. But in ordinary cavities, beginning near the contact point and with a tooth standing next in line, it is impracticable to attempt to gain sufficient access to do perfect work short of opening to the occlusal surface. Even if it were possible, after long continued wedging, to secure space enough to make a perfect filling, a fundamental objection to such a procedure lies in the fact that when the teeth drop together again after the operation, the line between filling and enamel comes in contact with the proximating tooth, thus inviting a recurrence of decay at that point.

Some of the most important considerations in the management of these proximal cavities may be enumerated as follows:

To check present decay. This consideration is probably met by most operators—at least by those who make an effort to do conscientious work. It merely involves the careful removal of all decay, the formation of sound margins, and the proper adaptation of filling material to prevent leakage. It would also seem to be apparent that so soon as this requirement is met, very many operators—among whom may be found the names of those accounted good—consider their whole duty done to the patient, and limit their efforts to this one accomplishment. In the light of the most advanced teaching on the subject, there are other important considerations which must be recognized to obtain the most permanent results in this line.

To provide as far as possible against recurrence of decay. Observant operators have learned in the past that there are certain points around an ordinary proximal filling where recurrence of decay is prone to take place. These points relate particularly to the buccal and lingual margins, and especially to the gingivo-buccal and gingivo-lingual angles, Fig. 1, *a a.* The reason for this is that where the cavity is left narrow, bucco-lingually, the line between the filling and the enamel is so far between the teeth that it is not readily kept clean, and the same influences are allowed to act on the enamel that induced decay in the first instance. Another source of failure in these narrow fillings may be traced to the fracture of the enamel at the proximo-occlusal angles, Fig. 1, *b b.* A cavity left narrow at the marginal ridge implies a corner of unsupported enamel on each side of the filling, and the force of mastication sooner or later results in fracture as illustrated. To avoid these forms of failure it is necessary to extend the cavity so that the line between filling and enamel shall be carried buccally and lingually to a point where it is readily kept clean, and where the enamel at the marginal ridge is well supported and strong. To this process Dr. G. V. Black has given the term "extension for prevention." Fig. 1, *c*, illustrates the form of original decay and the general outline of the cavity as left by many operators, while the line *d* shows the extent to which the cavity should be carried to insure the most permanent results.

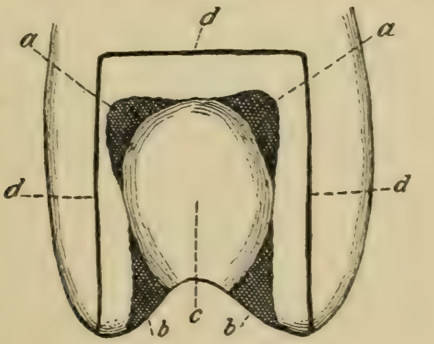

Fig. 1.

Another point of failure relates to a certain form of mismanagement on the occlusal surface. It seems to be the practice with some operators to allow a cavity to terminate in a fissure, without drilling out the fissure to the end. A fissure is invariably a defect in the enamel whereby two plates of developing enamel have failed to coalesce, leaving a leak for the ingress of deleterious matter. To allow such a fissure to extend from a filling is to invite recurrence of decay at that point. It may be laid down, as a cardinal rule never to be varied, that wherever a cavity leads into a fissure on the occlusal surface it should be drilled out to the extreme end of all its ramifications. Another reason is that the margin of a filling cannot be finished perfectly when it comes against a sharp depression like a fissure.

To securely anchor the filling against dislodgment. When the severity of the force of mastication is considered, and it is remembered that the constant application of this force in the comminution of food is brought to bear upon a filling, the importance of secure anchorage must be recognized. In addition to the ordinary stress of mastication, the filling is occasionally subject to exceptional stress from having hard substances caught between the upper and lower teeth, such as bits of bone in meat, shot in wild game, small pebbles in vegetables, and seeds in fruit. The leverage upon a filling, when the full force of mastication is thus concentrated on so small a compass, is enormous, reaching in some instances to nearly 300 pounds.

Various plans of anchorage have been employed by different operators. Retaining pits drilled at stated points in the cavity walls have been used extensively in the past, but have been found inadequate to hold a filling in place permanently. The strength of the filling material across the entrance to the pits is so slight that breakage invariably occurs at this point, leaving the pits filled and the main body of the filling loosened. The failure of pits led most operators to begin grooving the buccal and lingual walls for retention, and very many at the present time continue to rely upon this method for anchoring their fillings. While fillings of this kind have sometimes stood the test for years, and while occasional instances occur where on account of the exigencies of the case recourse must be had to this method of anchorage, it is yet confidently believed that for general use there is a better means at hand, and one which, in addition to giving greater security to the filling, simplifies the insertion of the filling material.

The limitations of the grooving method relate to the weakening of the walls of the cavity, resulting in fracture of the enamel margins, and to the inadequate retention of the filling under great stress of mastication. Where buccal and lingual grooves are relied on entirely for anchorage, any compressibility of the filling material in the grooves under repeated thrusts of the opposing tooth allows a slight shifting of the filling away from the cavity and admits a leak along the axial wall. This sooner or later results in failure.

The most approved method of anchoring these fillings relates to giving the seat upon which the filling rests a flat base, so that the filling is not easily shifted, and to extending the cavity into an anchorage step on the occlusal surface to provide against dislodgment from the tipping stress in mastication. To prepare a cavity in this way the gingival wall should be made broad and flat, the accomplishment of which bucco-lingually is attained in the process of extension for prevention, line *d*, Fig. 1. The shape of the gingival wall mesio-distally will be considered later.

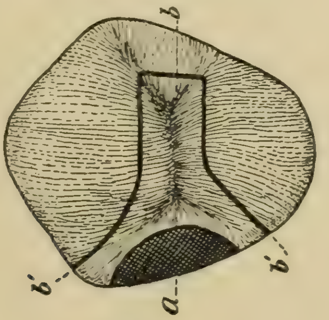

Fig. 2.

The formation of an anchorage step on the occlusal surface is one of the most important factors in the retention of these fillings. Fig. 2 illustrates the degree of extension for this purpose on a bicuspid; *a* original decay, *b* line of extension; which, as will be seen, also involves the drilling out of the fissure between the buccal and lingual cusps as previously advocated. With this form of anchorage intelligently carried out, a filling cannot be forced from the cavity by any degree of stress short of that necessary to break the filling.

To guard against fracture of the cavity walls surrounding the filling from too great leverage in mastication. This relates to the cutting away of all walls rendered weak by decay, or to so protecting them in those exceptional cases where it seems necessary to leave them, that the stress will fall on the filling material instead of on the enamel. There are cases where extensive decay has occurred in which a moderately thin wall must be left, but in all such instances the wall should be beveled well away, and the filling material built over it in such bulk that it is protected from stress.

The question of leverage on these proximal fillings also relates to the form given the filling on the occlusal surface. Wherever the attempt is made to build the filling out at the proximo-occlusal angle so as to reproduce the marginal ridge, it is found that the broad, flat, table-like masticating area admits of too great leverage from the opposing cusp and subjects the filling and walls to an unreasonable degree of stress. To guard against danger from this source, the filling should be sloped from the contact point on the proximal surface towards the occlusal anchorage in such a manner as to present an incline from the highest point between the cusps down to the immediate contact with the proximating tooth. When pressure in mastication is brought to bear on a filling formed in this way, the force exerted is more nearly in a direction central to the tooth, tending to drive the filling into the cavity against the axial wall instead of tipping it away, as is the tendency when the marginal ridge is reproduced.

Another important consideration in protecting the filling and walls against too great stress relates to the treatment of the occluding tooth. Close attention should be given to the manner of occlusion of the opposing cusp. If this cusp is too sharp, or if it extends, on closure of the jaws, so far between the cusps of the filled tooth that it necessitates making the filling too thin for strength, or presents an element of danger in the tendency to split the tooth, the occluding cusp of this opposing tooth should be ground down and rounded off. The permanency of the operation and the future safety of the filled tooth will be much enhanced by this procedure, while the occluding tooth, on account of the thick enamel at this point, will not be injured, if the grinding is done with judgment.

To preserve the form of the interproximal space so that the gum septum may fill it in a healthy condition. This feature in the management of proximal cavities carries with it one of the most important considerations connected with the subject. It is a point which is probably more often ignored by the average operator than any of those already mentioned, and the failure to recognize the simplest principles underlying its proper observance leads to more disastrous results and more continued discomfort to the patient than is easily imagined by those who have not given the matter careful study. A detailed description of the anatomy and function of the interproximal space is not permissible at this time, but a brief reference to some of the most salient points seems necessary to a proper emphasis of its importance. The interproximal space is the V-shaped opening between the teeth, having its base at the border of the alveolar process and its apex at the contact point on the proximal surfaces of the teeth. In the living subject, where the conditions are normal, this space is filled with gum tissue, which prevents in large measure the lodgment of deleterious agents between the teeth. When decay takes place and the contact point melts down, the teeth fall together, thus narrowing, and in some instances almost entirely obliterating the space. This results in a crushing out of the gum tissue and the formation of an unhealthy pocket between the gum festoons, in which particles of food find lodgment and decompose, producing discomfort to the patient and grave complications to the peridental membrane, besides accelerating the process of decay. In the management of proximal cavities, wherever the teeth have dropped together, they should be separated to their original position and then the filling so built to a contact point that they will be maintained there. From this contact point the filling should be sloped to the gingival margin of the cavity so as to reproduce the original form of the interproximal space. As much attention should be given to the proper form of the contact point and the outline of the space as to any other feature of the operation, and when this is done perfectly the gum tissue will creep up into the space and occupy it in as healthy a condition as it did before decay had taken place.

The principal faults of management as observed among many operators are manifest in a failure to gain sufficient space to properly build out the filling to form, and to an imperfect recognition of what that form should be. The contact point must be small and rounded, not broad and flat. A broad contact point entails the danger of having particles of food caught between the proximal surfaces of the teeth and held there indefinitely. This soon destroys the gum septum in the interproximal space and creates an unhealthy pocket. Fillings made flat on these surfaces are not only a source of discomfort to the patient but a menace to the permanency of the operation.

Details of Cavity Formation.—The gingival wall. As already indicated in Fig. 1, the margin of this wall should be changed from a curved line to a horizontal base. It will also be noted that there is some extension of the cavity rootwise of the original decay. This is done so that the gingival portion of the filling may be carried well under the free margin of the gum. If there is perfect adaptation between the filling and the tooth along this wall, and the cavity is extended so far rootwise that when the gum fills the interproximal space after the operation this margin is thereby covered with healthy gum tissue, there will never be a recurrence of decay at that point. Another reason for such extension relates to the manner of decay at the gingival wall. Usually the decay dips into the structure of the tooth, involving a deeper penetration rootwise into the dentin than at the enamel margin. This results in a groove along the gingival wall, with a ridge of enamel standing more or less sharp and ragged at the cavity margin. It is the habit of some operators to reproduce this form in the preparation of the cavity, but such a procedure is faulty from the fact that if the enamel is higher than the dentin at this point there is grave danger of fracturing it in the insertion of the filling. Enamel unsupported by dentin in a position such as this, where great stress is brought to bear against it from impact upon the filling, is insecure and unreliable. This enamel should be cut away on a level with the deepest portion of decay, and then the entire gingival wall extended into sound, uninfected tissue.

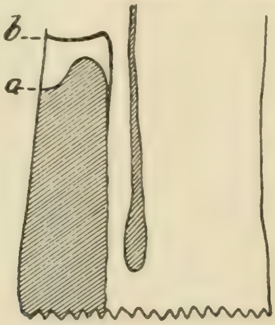

Fig. 3.

The form of this wall mesio-distally should be such that instead of being grooved, as often advocated, it should be nearly flat, with a slight incline rootwise from the point where the enamel is beveled to the juncture with the axial wall. The bevel of the enamel along this wall need ordinarily not be so great as along the buccal and lingual walls, on account of the absence of lateral violence against this margin after the filling is inserted, and the difficulty of making a perfect filling over a decided bevel at the gingival margin. The juncture of the gingival with the axial wall should be nearly a right angle, to insure a flat base for the filling to rest upon, and in the insertion of the filling material it should be solidly condensed into this angle. A filling thus seated will stand great stress without movement. As the angle between the gingival and axial walls approaches the buccal or lingual wall it may be carried slightly into these walls, or what might be called a shallow right-angled groove may be made at these corners for facility in starting the filling and retaining it firmly in position while being built up. Fig. 3 illustrates the usual form of decay at the gingival wall, *a*, with a line, *b*, indicating the proper form to be given it in preparation.

The buccal and lingual walls. Probably a greater diversity of opinion exists as to the proper form to be given these walls than any other feature of this class of cavity preparation. As has been stated, very many operators groove them extensively and rely on this for the retention of the filling. The limitations of this method have already been pointed out. Other operators pass to what might seem the opposite extreme, and slope them from the enamel margin obliquely toward the center of the tooth till they meet the axial wall, leaving the cavity much narrower at this wall than at the enamel margins. They thus depend for the retention of the filling entirely upon the flat seat at the gingival wall and the occlusal anchorage before referred to, ignoring altogether any possible retention between the buccal and lingual walls. Under these conditions, if there is any break in the filling at the occlusal anchorage, or any stretching of the material from repeated thrusts of the opposing cusp, the proximal portion of the filling is lifted away from the axial wall and a perceptible fissure made along the occlusal half of the buccal and lingual margins. This admits a leak, which results in a failure of the filling.

What might seem preferable to either of these methods is a modification of both. Deep grooving cannot be condemned too strongly, but the axial wall may be so widened bucco-lingually as to make the buccal and lingual walls parallel, or even present a slight divergence as they approach the axial wall. When the filling material is condensed between these walls it is mortised or dovetailed in place, and the security of the filling is thereby greatly enhanced without materially weakening the buccal and lingual walls. The stress to which these fillings are sometimes subjected would seem to make it the logic of caution for the operator to avail himself of every means at hand to add to the security of his work, and when the anchorage can be strengthened without weakening the tooth it should be done. Figs. 4, 5 and 6 represent cross-sections of a bicuspid, illustrating the different plans of shaping these walls.

The occlusal anchorage step. This should be sufficiently large to receive a bulk of filling material that will represent considerable strength. It must not, however, be deepened too far rootwise between the cusps of a bicuspid, for fear of weakening the tooth and rendering it liable to split. It may safely be carried in this direction to the bottom of the fissure, there being no element of strength between two plates of enamel where a fissure separates them. If it is found that the distance between the cusp of the occluding tooth and the bottom of the fissure is not great enough when the jaws are closed to admit of sufficient bulk of filling, it is advisable to shorten the occluding cusp, as already advocated. This will result in a stronger filling and also lessen the danger of splitting the filled tooth. The width of the step bucco-lingually should be governed somewhat by the manner in which the triangular ridges of enamel from the buccal and lingual cusps approach each other, but should be great enough to insure strength of filling material, especially at the point where the axial wall joins the step. As the step extends across the tooth from the proximal cavity, it should end in an abrupt wall.

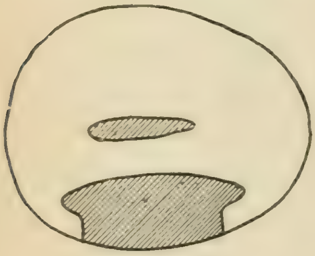
Fig. 4.

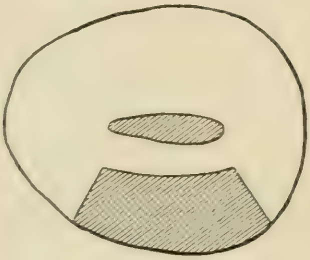
Fig. 5.

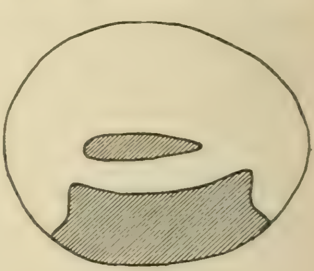
Fig. 6.

One of the most important considerations in making the step is the form of the seat. As ordinarily made it is more or less rounded, which has an element of insecurity in the possible shifting of the filling under stress. In all cases the seat should be made flat, thus presenting a solid base upon which the filling may securely rest. Fig. 7 illustrates the ordinary form, *a*, with the line, *b*, showing the proper form.

The treatment of enamel margins. In the development of a tooth the enamel rods are so arranged that they stand with their ends on the dentin and radiate out in a more or less parallel manner to the periphery. With this continuous array of rods covering the entire crown and supported by dentin, the enamel is capable of offering great resistance to stress. It is well-nigh impossible to fracture a piece of enamel crosswise of the rods, but when by any chance, such, for instance, as decay of the tooth, the rods are left unsupported by dentin, the enamel is easily fractured. This fracture is always parallel with the length of the rods, proving that the cement substance which joins the rods together is not very strong. More especially will the rods easily fall apart and drop away if the inner surface of the enamel is undermined by decay. A thin edge of enamel with nothing but the outer ends of the rods standing is exceedingly unstable. This shows the fallacy of leaving thin edges of enamel around a filling. Even if it were possible to properly adapt the filling material to such a margin without pulverizing it, the short ends of the rods would soon fall out, causing a leak about the filling. To gain the greatest security to a cavity margin the enamel should be so beveled that the outer ends of the rods are cut off and the filling material allowed to overlap the inner ends of the rods. This bevel should be greater along those margins of the cav-

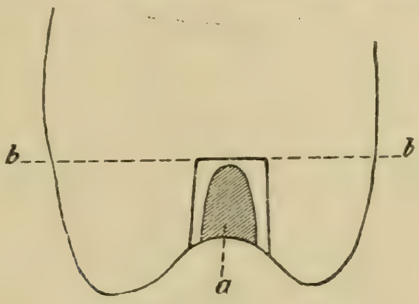

Fig. 7.

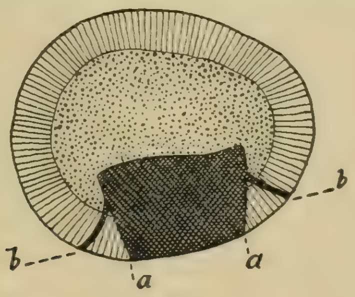

Fig. 8.

ity where violence is likely to occur, but it should never be so great that the overlapping filling material is carried out to too thin an edge. Neither must the enamel margin be rounded on its outer aspect. Either of these conditions results in a weakening of the filling material on account of too great attenuation at the margin. Fig. 8 illustrates the form to be given these margins, *a* imperfect form, *b* proper level.

General Considerations. Judging from observation, it would seem that the majority of the profession hold views in regard to the preparation of proximal cavities in molars and bicuspids which would make them insist that the plans here advocated were altogether too radical. We see statements and hear remarks about the "shameful sacrifice of sound tooth structure." The progress of events does not seem to be at all shameful when it subsequently sacrifices this same sound tooth structure around a filling by recurrence of decay. That recurrence will take place along the margins of fillings on the proximal surfaces when they are left narrow bucco-lingually cannot admit of doubt. It is seen too often in everyday practice, and observant men are no longer shutting their eyes to it. It does not always take place. Narrow, shallow fillings have stood for years, and are often pointed out as an argument in their own behalf. But if it were possible to sum up the percentage of failures in this class of work and place them against the few successes, the evidence would be overwhelmingly against narrow fillings.

No man can doubt that a judicious extension of the cavity will result in greater permanency to the operation. The only possible question can be as to whether or not we are justified in resorting to these radical measures in all cases, when there is probably a case now and then where it is not necessary. The tendency to decay in some mouths is so slight that almost any kind of fillings will save the teeth. Then in the same individual at different times there is a wide variation in the liability to decay. The case may run along for years with little recurrence of decay around fillings that were inserted in violation of nearly all the principles laid down in the most advanced teaching of the day. But a time of reckoning usually arrives. Suddenly—in some instances almost as sudden as the breaking out of an epidemic—a crop of cavities springs up. Walls melt down around fillings that have stood intact for years, and general havoc lets loose in the mouth. It is now that the supreme test has come, and we are able to judge as to the merits of the different methods. Small, narrow fillings topple and fall, medium fillings tremble in the balance, while broad fillings built on a firm foundation are the only ones that seem to have any assurance of safety. In some instances these also go, but in the majority of cases their permanency in the midst of the general destruction is really surprising, even to the man who inserted them. It is at such times as these that all doubt is removed in the mind of an observant operator as to which method is the most advisable. After a few lessons of this kind he does not feel like taking chances. No man can predict when he sees a mouth whether caries is likely to progress rapidly or not. If predictions of this kind could be made, it would give some license for less radical methods than here advocated. Long clinical experience may enable a man to guess more or less shrewdly after he has had a few years' observation of a mouth as to the probable tendency to decay, but no man may be sufficiently certain of his predictions to admit of indifferent work in those difficult positions on the teeth where decay is most disastrous, such as the proximal surfaces. That many men go on day after day inserting fillings in all conceivable positions in such a manner that failure is certain to occur reflects seriously on the profession as a whole. The more permanent we make our work the greater will be the confidence reposed in us by the people, and the larger our measure of accomplishment for humanity.

In this view of the case, we need no further indorsement of such methods as will insure—from the very nature of their mechanical philosophy—the greatest permanency to our work; and no further arraignment of many of the methods in vogue, whose ultimate result has all too often been manifest in the wrecks which have disfigured the pathway of dental effort.—*Western Dental Journal, May, 1897.*

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CONSTITUTIONAL TREATMENT AS AN AGENT IN DEVELOPING PERFECT TEETH. By J. M. Dunn, D.D.S., Oakland, Cal. Read at Oakland Dental Club, April 8, 1897. The subject I present has particularly occupied my attention from the fact of some splendid results which I have obtained from constitutional treatment. During my practice of eleven years I have been frequently discouraged by vain attempts to arrest caries in very young permanent teeth. But few of us are called on to attend the little ones until they have lost their temporary teeth, and at times we are appalled at the destruction of the permanent teeth we meet with which have scarcely erupted. Can it be possible that there is no remedy to arrest the attack of disease on and destruction of these organs? And why is it not just as feasible to develop and make strong the teeth as well as the other organs and muscles? Strictly preventive treatment in arresting decay must, of course, be governed by circumstances. Many times our best efforts will be frustrated by the patient's neglect to carry out instructions, and the disappointment incurred tempts the enthusiastic and conscientious practitioner to cease his scientific endeavors and let things take their own course, after patching the teeth up as best he can. But having met with astonishing success in seemingly hopeless cases I have the courage to continue my efforts. I had notable success in a recent case of a girl of 6 years old, who came to me with the temporary teeth almost entirely gone, and with the molars about to erupt. I prescribed the use of lactophosphate of lime, a teaspoonful twice daily. After patient had consumed a ten-ounce bottle I would stop giving it from two to six weeks, and then resume. In this case all the teeth have erupted in excellent condition.

Again, how few of our patrons do we find whom we can impress with the understanding that systemic treatment is the proper thing. They consider that such treatment should be prescribed only by the physician, and that the dentist is ''presuming a great deal'' (as a physician expressed it) to suggest it, and therefore, for this prejudice our patrons are not entirely to blame, since this has been their teaching. It is to a great extent the dentist's fault in not educating the public—and the physician, also—to understand the proper care and development of the teeth. How many physicians understand the development of the teeth, and how these organs are maintained and nourished after development? How often do we see, day after day, the evils that follow from the ignorance of the physician on the subject of teeth. Not long since I met a physician suffering from Riggs' disease, who said he could not understand why the dental profession did not exert itself to discover a remedy!

We all concede that the first molar holds a very important position, erupting, as it does, nearly a year before the temporary teeth are shed. It has many duties to perform: to keep correct the occlusion of the jaws, do the masticating till the temporary set are shed and replaced by the permanent ones, and to keep the face in shape. When a case is presented to us with the first molar mostly gone, is it not supposable that those following may take the same course unless some preventive treatment is followed out? Is it not our duty to prescribe when we see unmistakable signs of the lack of inorganic matter in the teeth? From the 6th to the 17th year the growth of the body is very rapid, and as the bone of the body has the most exercise it absorbs most of the bone-making element from the food, and leaves the teeth in poverty row because of the lack of building material. The teeth also should have exercise, such as biting on tough substances, coarse food, etc.

As a developing agent I have used the syrup of lactophosphate of lime more than anything else; also hypophosphites in milk, or the lime salts combined with other agents, as circumstances require.—*Pacific Stomatological Gazette, May, 1897.*

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DENTAL DECAY AS OBSERVED IN WILD ANIMALS WHILST IN CAPTIVITY. Reported by George Randorf, Berlin, Germany. Drs. Charpentier and P. Stivenim presented an interesting paper before the National Dental Congress of Nancy. It is well known that the animals are not exempt from decay of the teeth, and Dr. Francis Jean has already reported a case of dental decay of the tusk of an elephant. It would be of great interest to know to what degree this decay exists among wild animals, and they have arrived at the conclusion that captivity tends to increase this decay. Although its appearance is rare among them, we should imagine it would be still rarer among those at liberty. In the Natural History Museum at Paris skulls of all animals are preserved, and they examined therein the jawbones of three thousand specimens. They found as a result of their examination, especially of caries, many anomalies of size, form, extent and number. As animals are never attacked with syphilis they knew that the eroded teeth were not the result of this disease.—*Items of Interest, May, 1897.*

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ART IN DENTISTRY AND ART IN THE NEWSPAPER.—By Mr. Walter Macdougall, at Central Dental Association of Northern New Jersey. The subject of the toast, although Dr. Meeker has intimated that I need not pay any attention to it, seems to be the relation between art in dentistry and art in the newspaper. I suppose he thought they were related because one deals with drawing teeth and the other with drawing pictures, both of which are generally bad when they are drawn. The resemblance between the two arts may be found in the fact that both the artist and the dentist, when he has a job, generally sits down and makes out the bill first. Another way wherein the artist's profession and the dental profession resemble one another is that while medical mistakes are buried six feet underground, and your lawyers' mistakes are sent to state prison, the errors of dentists and artists are paraded in broad daylight, and even children can tell you whether the work is correct or not. Another connection is found in the fact that the very oldest sample of drawing in all the world is a very masterly piece of drawing on a mammoth's tooth found in a cave in France, a drawing made long before our age. Another very ancient sample of man's workmanship is one of the oldest writings extant, hieroglyphic writings, which in most minute terms describes a method of drawing teeth. Now these facts, well authenticated, are not only notable facts of history, placing the two professions in the very foremost rank of human endeavor, but they answer at once the carping criticisms and queries as to why artists and dentists roll in luxury while other men work for a living. In the line of honorable toil nothing is more ancient than the profession of dentistry or than the profession of the artist, and that is why the dentists live on the fat of the land, roll in luxury and smoke dollar cigars. But the artist has the advantage of the dentist in one respect. All the artist needs is a sheet of paper, a pencil, some ink and a little quiet, and he can sit down and become wealthy and famous, but the dentist must have capital. He has to buy gold, or what he sells for gold, and a lot of other expensive things, before he can do anything, or anybody. He must have brains, of course, but if he can't advertise they are of no use to him. Gentlemen, I can address you only with the greatest feeling. I have owed Dr. Meeker $5 for two years, and I cannot speak before so many dentists without much emotion. Therefore I must close, thanking you for your good dinner, which is an epoch in the life of an artist.—*Items of Interest*, *May*, *1897*.

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PYROZON AND PEROXID OF HYDROGEN. By W. H. Jackson, D.D.S., Ann Arbor, Mich. After using these substances, immediately before the permanent stopping of pulp-canals, I was at a loss to account for the frequent disturbances that followed, and found upon investigation that, although thorough precautions to dry the canals had been made, there would still be gas formed hours after their use had been discontinued. This is not written to condemn the use of these agents, for they are very valuable and I would not like to be without either of them, but would not advise the use of either agent within a short time of final stopping of the pulp-canal, for fear of disturbance following, except when there is a free opening through the gums.—*Ohio Dental Journal, May, 1897.*

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ENCYSTED BULLET IN THE ANTRUM. By Harry D. Watson, '97, University of Michigan. When 18 years of age, a gentleman accidentally received a bullet from a 32-caliber revolver, at a distance of less than two feet. The ball struck the superior maxilla on the right side, at the upper termination of the cuspid eminence. The first bicuspid was shattered by the ball, while the cuspid was completely removed. Less than an hour after the wound was probed and it was found that the bullet had pierced the wall of the antrum, but the physicians could not locate it, nor could they find any evidence of its penetrating the posterior wall of the antrum. This left no doubt that the bullet was in the antrum, but they failed to find it there. The wound was treated antiseptically and a drainage tube inserted. In three months it had entirely healed and remained so for five months, when it began to swell and become painful. It was then lanced and quite a quantity of pus removed, after which it quickly healed, and for the past four years has not given him the slightest inconvenience. The physicians were of the opinion that the ball would become encysted by a growth from the lining membrane of the antrum and give no trouble. This is undoubtedly what happened.—*The Dental Journal, May, 1897.*

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APICAL AMPUTATION OF ROOTS. By E. B. Lodge, D.D.S , Cleveland, O. Believing that the operation of amputating the apex of the root is a procedure of the utmost value in a certain well selected class of cases, the writer has chosen to deal with this subject. There are several distinct conditions where we would think this operation the best, if not the only satisfactory treatment. (1) In chronic alveolar abscess where, owing to sanguinary calculus at the apex of the root, the ordinary treatment is ineffective. (2) In cases where the root-canal has been filled, entombing septic matter at the apex in sufficient quantity to cause a condition of chronic irritation at the apical space, or in cases where irritation comes from a mechanical cause, as for example, a broken nerve-broach protruding through the apical foramen. (3) In event of exostosis at the end of the root. (4) In cases where the presence of the pulp nodules will not permit the action of arsenious acid.

Having decided that the operation is indicated in a certain case, and having produced local anesthesia by some method reliable in the operator's hands, remove the overlying gum tissue sufficiently to expose the process at the point where it is to be operated on. There are three methods of doing this: (1) By the use of an escharotic, as 95 per cent carbolic acid, applying it at the proper point and carefully scraping away the coagulated tissue, then reapplying the agent and again scraping until the process is exposed; or, (2) by using a tubular lancet in the engine, cutting a circular incision, the tissue lying within being then dissected away, bringing the alveolar process to view; or, (3) by the use of the three line or Y-incision, the flaps being turned back. This method the writer ordinarily prefers.

Now, having the process exposed over the apex of the root, select a Younger trephine of suitable size for the case in hand, and with the engine pass it carefully through the external plate of bone and then on through the apex of the root. The included tissue will perhaps come away with the instrument, but if it does not, it can easily be removed with some form of excavator. If it is desired, from the nature of the diseased condition, to remove more than simply the apical portion, then instead of placing the trephine over the apex of the root, place it nearer the crown of the tooth and pass it through the root. After thus removing a section of the root, the apex may be dislodged by the use of a suitable instrument. All that is now left to be done is to take a fissure bur of the proper size and remove any remaining spicule of root or bone and also any necrosed tissue that may not have been included within the trephine. Then syringe out the cavity with tepid water, containing some good antiseptic, as phenol-sodique. This will remove any remaining fragments of tooth or bone and render the cavity aseptic.

If the root has not been filled, now is the time for that operation. The filling material may be forced through the root and the excess removed, and the end of the root left smooth. The wound should now be filled with a tent of cotton saturated in phenol-sodique or other antiseptic and the operation is completed. The dressing should be renewed the following day and for a few succeeding days, until it has become sufficiently filled with granulations to make it no longer needful. The wound usually heals kindly and in a short time, leaving the tooth in good condition.

The operation is not difficult to perform and the writer has employed it successfully, even upon the molar teeth. Strict asepsis should, of course, at all times be observed. The writer regards apical amputation as an excellent measure to resort to where other means of saving the tooth offer little hope, and he is confident that no one is better prepared to do this than the well-equipped dental surgeon.—*Ohio Dental Journal, May, 1897.*

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HOW THE BACTERIAL ORGANISMS ARE STUDIED. By J. E. Lamb, M.D., Wahoo, Neb. The technique of investigating these microscopic plants is manifold. Microscopy alone is inadequate. Identification requires other tests than those afforded by the microscope. These tests are: (1) Staining agents. (2) Appearance of cultures. (3) Reaction to heat and oxygen. (4) Pathogeny.

1. *Staining agents.*—Watery solution of the anilin dyes penetrates the protoplasm in the cell bodies of most bacteria, yet the tubercle bacillus long eluded observation because it absorbs the solution only when the water is reinforced by some other agent like carbolic acid or alcohol This microbe is stained with great difficulty, but once stained, it is very resistant to decolorizing agents. Upon these facts all staining solutions and methods of staining are founded. Some operate slowly, others more rapidly.

In order to appreciate and differentiate the tubercle bacillus, the following solutions and methods of use are more easy and simple to manipulate than any others with which the writer is acquainted. It is hoped they may prove as acceptable as those you are now using:—I. Fuchsin pulv., 15 grains; Alcohol, 2 drams; Aquæ distillat, 1 ounce. II. Aquæ distillat, 1 ounce; Liquor ammonia, 3 minims. III. Alcohol, 1½ ounces; Aquæ distillat, 6 drams; Nitric acid, ½ dram. Anilin green, to saturation.

To stain: 1. Gently press a small part of the most solid portion of the suspected sputum between two cover-glasses. 2. During five minutes place one cover-glass in equal portions of solutions one and two, heated till vapor rises. 3. Rinse in water, put a drop of solution three on it, rinse again. If the mount is not a distinct green, put on another drop of solution three, wash again, dry and examine.

The use of the following will also afford gratifying results: Ziehl's Solution.—Fuchsin pulv., 1 part; Alcohol, 10 parts; Acid carbolic, 5 per cent sol., 100 parts. Gabbet's Solution.—Methylin blue, 2 parts; Acid sulphuric, 25 per cent sol., 100 parts. 1. Prepare mount as above, hold high over a flame until dry. 2. Place cover-glass in Ziehl's solution five minutes. 3. Place cover-glass in Gabbet's solution one minute. 4. Dry, examine with oil immersion.

If a hurried diagnosis is unimportant, but permanent mounts desired: 1. Place cover-glass, with dried sputum, in Ziehl's solution twelve hours. 2. Hold in nitric acid, 25 per cent solution, till brownish black. 3. Hold in alcohol five seconds. 4. Hold in water one second. 5. Dip once in two, three, and four, if color is deeper than light pink. 6. Cover mount with Gabbet's solution two minutes. 7. Dry and examine as above.

A one-eighth or one-sixth objective, in other words, the enlargement of 400 diameters, with or without eye-piece multiplications, produces a clear field sufficient for diagnostic purposes.

Alcohol mixed with fresh sputum in order to preserve it coagulates the albumen, which should be softened with a two per cent solution of caustic potash before spreading over a cover-glass. A saturated solution of borax preserves the sputum, liquifies the mucus and does not coagulate the albumen.

Most cocci take Gram's staining readily. The gonococcus, however, being an exception, will not take Gram's method, this being one of its main diagnostic features. It takes all the ordinary anilin stains. Gram's Solution.—Iodin, 1 part; Potassi Iodidi, 2 parts; Aquæ distillat, 100 parts. The potash is not indispensable but added to facilitate solution.

2. *The color of colonies.*—If the individual bacteria in any given species be grown on a suitable soil, such as gelatin, bouillon or potato, there results a mass or colony of these minute plants whose size, shape and color afford essential means of differentiating the organisms, and the bacteriologist uses them for recognizing his minute plants just as the chemist uses the behavior of a given sub-

stance to identify his still more minute molecules. The streptococcus grows into light gray colonies, while the staphylococcus produces bright yellow. It is only when growing in masses that enough color is formed to be visible. Not infrequently are these colored masses so luminous that they can be photographed by their own light when placed in a dark room. Indeed, the color of our mischievous microbe played a conspicuous part in many of those natural phenomena which, by their lack of apparent cause, were in early times relegated to the domain of the supernatural. That wavering, cold, uncanny, phosphorescent light, seen at night time in putrid plants or by the seaside, is our innocuous microbe. The consecrated wafer placed in the bacteria-laden air of the church edifice over night was found besprinkled with crimson drops in the morning. The legends are long and tragic of the dire calamities, unmentionable crimes and swift retributions which the strange appearance of our chromogenic microbe was supposed to foreshadow. A recourse to the supernatural to elucidate all these natural phenomena is no longer necessary, for to-day we cultivate and study the tiny bacillus prodigiosus which made the drops of blood, the mingled green and blue phosphorescence.

3. *Heat* and *Oxygen.*—Like the larger plants, different species of bacteria require different temperatures for their growth. Most all grow well at 60° to 80° F., but the tubercle bacillus ceases to grow below 92° F.

As microbes assume very diverse forms in accordance with the nature of their environments, so also their habitat and mode of life divide them into very distinct classes. The aerobines can subsist only when they breath the natural oxygen they withdraw from the atmosphere. The anaerobines live within fluids and living organisms, and derive the oxygen necessary for their respiration from the oxygenated substances in which they are found. To the latter class belong all microbes which provoke pathological changes when introduced into the blood.

4. *Pathogenesis.*—Living animal tissues afford unfavorable soil for bacterial growth. When introduced into animals a large majority produce no appreciable effect. It is now known, however, that upwards of thirty species are capable of nourishing themselves in animal tissues. No species is pathogenic in all animals, but each only in certain kinds. The anthrax bacillus grows well in sheep,

but refuses to grow when planted in dogs or cats. Hence the behavior of a given species when inoculated into different animals is another means of differentiation.—*St. Louis Medical Review.*

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DIFFICULT PARTIAL IMPRESSIONS. By Homer Heberling, D.D.S., Lehighton, Penn. Several weeks ago a lady presented desiring a partial upper denture. An examination of the oral cavity revealed a V-shaped arch with several sound teeth, posteriorly and anteriorly. Wherever possible I prefer taking plaster impressions in partial cases; I therefore proceeded in the usual manner to get a plaster impression. The teeth were at unfavorable angles, seriously interfering with the work. After several unsuccessful attempts and spending considerable time in trying to patch together broken pieces which were more intricate than a Chinese puzzle, I hit upon the following method: That portion of the plaster which came out intact, viz., the palatal surface, festooning teeth lingually, and partially covering the ridge where teeth were absent, I replaced carefully in the impression-tray, flowing *very* soft plaster where the first impression had been imperfect. I next pressed the tray and plaster quickly into the arch, retaining it in position until the new plaster had set in. The cup was then easily removed, the new plaster fractured cleanly and in large pieces, some, however, remaining cemented to the original impression, making it a simple task to reunite the whole. The result was a perfect model of all the teeth, ridge, palatal surface and condyles, from which I made a well-fitting plate.—*Items of Interest, March, 1897.*

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NEW METHODS IN PROSTHETIC DENTISTRY. By Dr. T. C. West, Natchez, Miss. Read at Miss. Dental Ass'n, April, 1897. In the construction of a vulcanite denture a more life-like appearance is obtained, and greater accuracy and greater strength secured, than by the old method of procedure, by the adoption of the following innovations: (1) After securing an accurate plaster cast, coat it with rubber-cement. Into the cement press closely onto the cast, with thumbs and fingers, black vulcanizable rubber, which will adhere to the cast. If there are any depressions on the alveolar ridge the black rubber should be thickened at those points to even up the surface. (2) The next step is to vulcanize this—but only out three-fourths the usual time of vulcanizing a rubber plate

This forms what may be called *a base plate*, which is to be tried in the mouth and trimmed to accommodate the muscles. It will be found that this will fit the mouth better than the ordinary vulcanite plate, because it has been pressed closely on to the cast with the thumbs and fingers, escaping the screw-pressure in closing the flask after packing, which is so apt to distort or obliterate the finer features of the cast. The rugæ are also nicely represented, the rubber over that portion being of uniform thickness. (3) This vulcanized piece is now used as a base-plate in "taking the bite," which place in the articulator and carefully fill the palatal portion of the vulcanized base-plate with plaster. (4) The bite-wax is removed when the plaster has hardened and the surface of the base-plate washed with chloroform, benzine or gasoline, the alveolar ridge portion coated with amber cement and covered with a sheet of red rubber—not extending it over the palate. (5) The teeth are now warmed and pressed into the red rubber. It will be found that the rubber will bulge over the necks of the teeth, forming a very natural festoon, without any spatulating. (Teeth with a slight groove at the neck, such as are made for celluloid work, are the best for use in this method.) (6) The next step is to place a strip of wax to cover the pins of the teeth, being careful not to melt it. In this condition the piece is tried in the mouth, and any desired changes in the position of the teeth made by removing the tooth, warming it, and resetting as desired, while the piece is in the mouth. (7) Now a piece of modeling composition is used to fill the vault and form a support for the lingual faces of the teeth. (8) When this is hard the teeth are removed and a *thin* sheet of pink vulcanizable rubber is warmed and placed over the labial and buccal surfaces, extending over and into the depressions from which the teeth were removed, each tooth being then warmed and returned to place, the sockets in the modeling composition showing the exact position of each tooth. (9) Now coat the surface of the pink rubber with light tin-foil—it is not necessary to use heavy foil, as no screw pressure is to be used in this process. (10) Next put the piece on the cast which was poured into the vulcanized base-plate (see 3) and place it in the shallow portion of the flask, building the plaster up so as to support the buccal and labial faces of the teeth. (11) The modeling composition is now removed, as also the wax from the pins of the teeth, and for this purpose it may be necessary to use hot water. (12) Coat the teeth about the pins with amber cement and put in red rubber, cut in small pieces, so as to anchor the teeth; coat with a layer of tin-foil, and—without either soaping or varnishing the plaster—fill the upper portion of the flask, put in the bolts and vulcanize in the usual way, *regardless* of the partial vulcanization of the black rubber base-plate.

When the piece is removed from the flask it will be found that there is no excess of rubber and no filing or scraping to be done. It is necessary only to rub the surface with a stick wrapped with bibulous paper, dipped in a dish of pulverized pumice moistened with water, alcohol, or best of all, with chloroform. This can of course be followed with chalk and a piece of chamois skin or flannel, and the rubber bleached by placing in a dish of alcohol in the sun. By this method there is saved the time usually spent in "waxing up;" in waiting for the plaster in the flask to harden in order to remove the wax; in packing, heating up and screwing down the flask; and the time required to scrape and finish up the piece, also preserving the hard vulcanized surface-portion of the rubber.

Method of Modeling Gum Festoons.—Having vulcanized the base-plate, as in (1) and (2), the teeth are waxed on as usual; but instead of carving up the gums, lay a strip of moldine over them close to the necks of the teeth. Punch holes in the semicircular piece of very thin rubber-dam and stretch this over the teeth, care having been taken not to leave any wax between them. Now stretch the rubber-dam back over the moldine, which by a little manipulation through the rubber forms the gums very nicely. Where necessary the rubber can be turned back and moldine added until proper contour is given. The piece is now flasked with the rubber-dam still covering the moldine. When the flask is opened and the wax washed out the rubber-dam is removed, carrying the moldine with it. The piece is packed in the usual way. After vulcanizing it will be found that the gums have a smooth surface of good form and that there is a happy absence of that dirty little piece of rubber down in between the teeth, which by the ordinary method gives so much trouble.—*Ohio Dental Journal, June, 1897.*

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INCISOR OR CUSPID CROWN. By W. H. Brown, Nashville, Tenn. The only way I can make an open-face crown for a cuspid or incisor, that will fit perfectly, is as follows: Take, for instance, a central incisor on the right side, the left lateral and cuspid are out, and you want to make an open-face crown for the central. First, get your strip of gold a little wider than the tooth is long, and a little longer than will go around the tooth. Bring it around the tooth and with a pair of flat pliers pinch and draw tightly around it until it fits perfectly. Hold it tight and with another pair of pliers, of the same kind, draw or pinch the gold down at the point of the tooth. Stick a pin through the edges, remove and solder together. Trim edges and cut out the face in the usual way. You will find that it fits perfectly and will not take five minutes to make the crown in this way. If the tooth is broken off at one corner build it up with cement.—*Ohio Dental Journal*, *June*, *1897*.

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PORCELAIN INLAYS. By N. S. Jenkins, D.D.S., Dresden, Germany. At last I realized that a new material must be evolved, one which combined the good qualities of both porcelain and glass, and to its evolution my laboratory has been devoted for the past three years. The problem I set myself was, to make a low melting porcelain, which should retain its color, could be melted to a perfect fusion in a gold inlay, and which would have a clean edge so hard that it would not fracture in setting, nor in enduring the strain of mastication. This result I have at last attained.

Our most successful experiments in pure glass were made by my partner, Dr. O'Brian. Among other things, he discovered that, after a glass filling had been melted, its surface could be immensely improved by placing upon it a thin plate of clear glass and melting once more. By this means a surface was obtained so smooth, and so nearly representing the enamel, that the most beautiful operations could be made. Only, as in all glass fillings, contours were not certain, overflow easily occurred, and perfect manipulation required much care, experience and skill. Besides which, the porosity of the underlying glass made permanency of color uncertain. This method is, however, an extremely valuable one. Every now and then a case occurs where the conditions require just such a surface as can be obtained only in this manner.

In making an inlay filling, the first step is to properly prepare the cavity. There must be no undercuts, or at least only in one direction, and the edges must be clearly defined. A perfect impression must be obtained, employing gold-foil for the purpose. Platinum, however thin, and however carefully used, is too intractable for accurate work. For my method, gold-foil No. 30 is in almost all instances sufficiently thick. For very large and complicated cavities No. 40 may be taken. The piece of foil must be generously large, and carried, with cotton or spunk, first to the deepest part of the cavity, leaving the edges free; for, of course, the foil will not stretch, but tear, if it is confined to any exterior point as it is being pressed home. Then another and somewhat larger piece is packed into the cavity, and when this is quite full, the edges are then made, and pressed or burnished until they are perfectly smooth. If there is too much overlapping margin, it can be trimmed away with a sharp lancet. The cotton or spunk must thereupon be removed, when, with a sharp-pointed excavator, inserted at the most favorable place within the cavity, the gold can be loosened and gradually worked out in unimpaired condition. The impression thus made is laid upon a creamy bed of powdered asbestos and water, at the bottom of a small, long-handled platinum or nickel tray, which is gently tapped until the gold has sufficiently imbedded itself in the asbestos. The tray is now held over the blow-pipe and the asbestos completely dried, a condition usually indicated by a loosening from the bottom of the tray. The contents of the tray being sufficiently cooled, the powdered porcelain mixed with water — distilled water is preferable—is placed in the impression, care being taken to have it come exactly to the edges, but not to overflow at any point. It is then built up somewhat higher in the middle, or on those parts which it is desired to contour, an excess of material being necessary to compensate for the consolidation attendant upon melting. After some experience it is possible to get, in most instances, the exact fullness required in one melting, but there is no objection to adding more porcelain and remelting, except loss of time. When the inlay has been properly packed, a cover, which has an opening through which the process can be observed, is put upon the tray, and the whole placed in an asbestos-lined muffle, open on one side, and with a round hole in the bottom. Through this hole a gentle heat from the blow-pipe is turned on, the moisture in the powdered porcelain thus being slowly evaporated, not boiled out. Then the finger is placed upon the spring of the blow-pipe, and under the action of the bellows the heat is very gradually increased until the mass is completely melted. The finished inlay is then removed from its asbestos bed, and the corners of the gold-foil gently turned backward until it comes away in a complete piece. Any particles of gold which may adhere to the inlay can be easily removed with the point of an excavator. After trying it in the cavity, to make sure that the fit is perfect, the inlay is usually grooved on the inner surface, generally with a small diamond disk. Slight undercuts are made in the cavity, everything is perfectly dried, and the inlay is set with some reliable phosphate of zinc mixed to a thick cream. A little of the phosphate should be smeared within the cavity, as well as upon the bottom of the inlay, the latter being carried at once gently into place. In an approximal cavity I use a piece of tape to bring the filling into position, and at the same time remove the surplus phosphate. In other cavities any convenient method may be employed to remove the surplus, but in all cases it is best to exert the final pressure with a bit of wood, except where it happens, as sometimes in a labial cavity, that the thumb-nail can be easily used. With firm but gentle pressure the inlay is held in place for a few minutes, when it can be left alone, with the rubber-dam in position, until the phosphate is completely hardened. In many cases it is safe to cover with varnish, dry with hot air, and remove the dam after a few minutes, but this detail is a matter of judgment. At a subsequent sitting any slight surplus of overlying phosphate is carefully removed with a fine-pointed excavator, when it will be found that the line between the inlay and the edge of the cavity is no wider than such cracks as one often finds in the enamel.

The beauty of this work is equaled only by its practicability. Accurate contours can be made. Of course it is not applicable to all approximal cavities, but in places where its use is indicated there is no doubt about the condition of the cervical margin, that weak point in obscure cavities, and especially where the pulp is nearly exposed, if intelligently and accurately made it will stand even better than gold, since it is not supported by, but assists to support thin and frail edges. The operation, although requiring considerable time, is far easier for the patient to bear than the packing of gold. The time of the patient may be saved by taking the impression at one sitting, and making the filling in the patient's absence. To be sure, by carefully following the directions, any ordinary dentist can in many instances make in this manner a beautiful and enduring operation, but it is by no means a cheap and easy method. Its proper employment requires the highest qualities of skill, judgment and taste. Only experience will show how the obstacles peculiar to this process are to be overcome, but when this method is once mastered it gives to the competent dentist a range of operations so wide as to greatly increase his interest in his work, as well as his usefulness to his patients, who immensely appreciate the advantages of this treatment.

Time fails to enlarge upon the use of this porcelain in pivot teeth, crown and bridge work. With it all the visible part of a broken-down molar can usually be restored, with a platinum ring about the neck of the tooth. Malformed roots can be securely crowned, with or without a ring, according to the case, and where the tooth must be thin, because of the closeness of the bite, a far stronger tooth can be made with this material than with a soldered gold backing. When a tooth thus united to a platinum pivot is put under the hammer, it will be found that the tooth will fracture before this porcelain. One advantage is found in being able to solder rings, pivots and pins of platinum with gold, and then melt the porcelain without fearing that the gold will melt or flow.—*Dental Register, June, 1897.*

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BRITISH TEETH ON THE DOWN GRADE. By Charles Fox, L.D.S. Cause 1. There used to be a popular belief that sweets were the cause of bad teeth, and our childish appetites were oftentimes checked by warnings dire and dreadful, as to the effects of the seductive caramel or acidulated drop. So many other reasons have however been given publicity of late, that one finds patients losing faith in that sweetmeat bogey. I would lay great stress, however, on the enormous increase in the use of sugar in the United Kingdom during the last two decades, and without actually bracketting cause and effect, call attention to the fact that the increased consumption of sugar coincides with the deterioration of teeth.

During the first forty years of the century, the rate of consumption was singularly stagnant. At a price of 10 d. per pound, folks were content with about 18 pounds per head annually. In 1870 we find the duty reduced, and 47 pounds indulged in. This rapidly rose to 54 pounds per head in 1876, and in the last twenty years it has steadily increased, until the enormous weight of nearly 100 pounds of sugar is used on an average by every man, woman and child in the United Kingdom. Huge confectionery manufactories are the growth of our own times, the outcome to a large extent of cheap sugar. Fruit entering, as it rightly should, more freely into the diet of the people, is deluged with sugar when preserved, and even bread is very often rendered tempting to the present taste of the race with sugar. The many millions of pounds of tea require extra sugar to sweeten the cheering draught.

I recently examined the teeth of several union children, tabulated their condition and compared them with an equal number of middle-class patients of the same age. It was astonishing the extent to which decay had advanced in the mouths that had daily access to cakes, jam and candy, and passed the little paupers by on the other side. The unionists had sweets perhaps twice a year, on treat days, and their great mugs of tea and milk were but scantily sugared. The work-house fare was plain in the extreme, but its dental results were very fine. Dentist and toothbrush, plus excess of sugar, were no match for nature and simple fare.

One schoolboy gourmand, who required much dental care every three months, and in whose mouth one's most conscientious stoppings seemed always undermined by fresh ravages, went into the navy. For three years he was cruising in the Mediterranean. There being few chances to add to the plain tack of H.M.S., these three years were less fruitful in profit to the dentist than any preceding three months. Several patches of arrested decay seemed to demonstrate that the altered condition of the secretions conquered the tendency to caries very soon after the confectioner was left behind. Yet in many ways his schoolboy environment was superior. His rooms were better ventilated, his outdoor exercise well nigh as great, his studies no more irksome, and his medical and dental supervision far greater. But the boy's stomach was tormented by an excess of sugar and the oral cavity directly and indirectly vitiated by acidity. —*British Journal of Dental Science, June, 1897.*

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PHOTO-MICROGRAPHY. By Mr. W. H. Must. Read at the Students' Society, National Dental Hospital. I will describe what I consider a student's camera, and the way to use it. The camera before you I made by getting a second-hand half-plate camera without a lens, removing the short bellows and replacing it with one having an extension of thirty-six inches; the object of having such a long extension is to get magnification. The lens end of the camera is screwed on to the fore part of the baseboard, while the ground-glass screen and bellows move backwards and forwards, and can be fixed at any point by means of a screw at the base of the screen. A brass rod by which focusing can be done runs along the side of the baseboard, and is attached by means of a rubber ring to the fine adjustment of the microscope. There is really no need of this, because when using low powers the bellows are not extended very far, and you can easily turn the fine adjustment with your hand and focus the picture on the screen; even when using an immersion lens and the bellows are extended, by placing a looking-glass opposite the screen the image of the specimen is reflected in it and can be focused. On the projecting board in front of the camera rests the lamp, condenser and microscope, the latter having its legs let into the wood to keep it steady. A camera like this costs about twenty-five shillings; I mention this because people are under the impression that photo-micrography is a very expensive hobby.

To take a micrograph, bend the drawtube of the microscope till it is horizontal, adapt a piece of cardboard or rubber washer to the tube, so that it fits close to the orifice for the lens and excludes all light from the interior of the apparatus. Place the lamp opposite and about ten inches away from the substage condenser, remove the mirror, and, looking through the microscope, focus the edge of the flame, moving the lamp about till the edge is right in the center of the field, then remove the eye-piece and line the inside of the drawtube with black paper; this is to prevent a ''flare'' spot. Place the bull's-eye condenser, with its convex side towards the microscope, between the substage condenser and the lamp, its distance from the latter being within its own focal length. This is a very important point, for if you place it farther away than its focal length there is a marked loss of light. Shut the diaphragm, leaving only a very small aperture, and by carefully moving the bull's-eye condenser concentrate the light through it, look at the screen and see if the lighting is uniform all over the field; if it is not, move the condenser, or it may be necessary to turn the wick of the lamp a little. Too much stress cannot be laid on the illumination of the object and centralization of the condenser; when you get a bright field, mark position of lamp on the board, also its height, for future use.

Now place the specimen on the stage and draw the bellows of the camera out till the light just covers the whole screen; by turning the fine adjustment focus the image till it is nice and sharp; time can be saved by tilting the microscope up, finding the place you want to photograph, focusing it and then getting the microscope into position again. Put the double back containing the sensitive plates in place of the screen, interpose a piece of cardboard between the diaphragm and the lamp, draw out the shutter, and, by removing the cardboard, expose the plate; the time of the exposure varies with the amount of light and the objective used; each one must find out the time for himself. A good way is to expose a part of the plate, say for ten seconds, then draw the shutter out a little more and expose that part for the same time, and so on until the whole plate is exposed, develop the plate and see what part has had the right exposure. Keep a record of all the exposures and the result, and in a very short while one can make certain of the time.

Always use the cardboard to shut off the light before sliding in the shutter, and when a plate is being exposed, if there is any vibration caused by a carriage passing or by people walking about the house, shut off the light by means of the cardboard, removing it when all is quiet; the least vibration will spoil the sharpness of the negative, so it is always best to use the ground floor.

The iris diaphragm must be used carefully; there is no rule for it, simply open and shut it till you get the best definition. I have found it better to have less light with a longer exposure, than a bright field and short exposure. An ordinary microscopical lamp burning paraffin oil is quite good enough; if a little camphor is put in the oil the light is rendered more clear and active.

Specimens that are counter-stained or deeply stained may require screens or colored glass, placed between the illuminant and the specimen, the color of the glass being the complement of the color of the specimen. Violet and blue rays are more chemically active than the red and yellow. After this point it is ordinary photography.—*British Journal of Dental Science, June, 1897.*

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CANCER OF THE LIP. By C. L. Gibson, M.D., New York City. Read at New York Odontological Society, Feb. 16, 1897. The treatment of malignant growths throughout the body has of late years been attended with markedly better results as regards the preservation of life. For instance, within a period of ten years the prognosis of cancer of the breast seemed so bad that a most experienced and judicious surgeon raised the question whether we should not better do our duty by our patients by refraining from operating on them, while on the other hand, within a few years long series of well authenticated cases have been recorded by reputable men with twenty-five to thirty per cent cures. This happier result has been attained chiefly by two methods, the constant effort to extend the scope of radical operations within the limits of safety and physiological requirements, and the better education of the profession in general to the necessity of early recognition and treatment of such malignant growths. The limits of operative boldness would seem now to have been reached, but much missionary work yet remains to be done in regard to early treatment. The work of dissemination of the knowledge concerning surgical possibilities as well as the limitations of surgery must be undertaken by surgeons, and the treatment of malignant disease will show more favorable results in proportion to their efforts in this direction. Influenced by this latter motive, I have ventured to ask your consideration for this brief study of one form of cancer which is quite likely to be seen by the members of the dental profession before the surgeon is consulted. Cancer of the lip has been in existence on an average a year and a half before professional advice is sought for it. As a large proportion of persons of this community, certainly the well-to-do class, consult a dentist within that period, I am sure the opportunity must frequently be given to the members of your profession to be the first to recognize the presence of a new growth on the lip.

Cancer of the lip belongs to that class of new growths which are called epitheliomata. These epitheliomata are of two types, differing both in their histological constituents and in their clinical course. The superficial form is distinguished by being composed chiefly of small epithelial cells, pursuing a chronic course, seldom being attended with danger to life. It is found almost exclusively on the face, and is now proven to be identical with the rodent ulcer as described by the older authors. The deep-seated variety is the one that interests us, as cancer of the lip is its typical representative. It represents a polymorphous type of growth, and has a tendency to attack surrounding tissues and glands, but is less often the cause of metastatic growths than cancer of internal regions. The disease, like cancer in general, affects mostly those in advanced middle life. I have found two interesting observations on extremes of age.

Gangolphe reports the case of a boy of fifteen, of excellent health, from whom he removed a growth of the lip the size of a dime, proven by careful microscopical examination to be cancer. Jalland removed a cancer of the lip in a man aged one hundred and two years, who made a perfect recovery.

The disease up to the present time is essentially a prerogative of men. It is hard to say how often it does occur in women. In common with many other surgeons, I have never encountered a case in a woman. When it does occur in the female, the upper lip is more often the seat of the disease, while in men the upper lip is affected in little more than one per cent of the cases. There is no satisfactory explanation why the upper lip should be so frequently attacked, for the mechanical causes held responsible for cancer of the under lip are, with the exception of shaving, present in both cases.

As regards the causes of the disease, to traumatism in general is assigned the chief place. The lips are so easily abraded, cracked, chapped, burned, and otherwise maltreated that abundant sources of irritation are furnished. Smoking, especially of a clay pipe, must be accounted a factor, as such a history is given in the majority of cases. Still it must be acknowledged that the number of cancers of the lip to the number of smokers is infinitesimal. Winiwarter removed a cancer from the right side of the lip in a pipe-smoker who had always held his pipe in the right-hand corner of the mouth. He presented himself five years later with a similar process on the left side, where in the meanwhile he had been accustomed to hold his pipe, not liking to press on the scar.

As regards the element of heredity, there is an overgrowing tendency to belittle its importance. It is undoubtedly true that the belief in heredity, so strong until recent years, was based to a great extent on tradition. The efforts which we are all making to place medicine on the plane of an exact science discourage the acceptance of vague histories concerning cancerous relationship; and subjected to an exact scrutiny, the family history of cancer is reduced to so small an extent as to be looked upon by many as only an interesting coincidence. I must acknowledge at this point that in no class of cancerous tumors have I so often encountered such striking family histories of heredity as in cancer of the lip.

I call attention to the recent rather startling observations that have been recorded of cancer being acquired by living in dwellings previously occupied by the subjects of cancer,—cancer houses, as the term has come to be applied. This is a subject of which the layman may be in a position to obtain information more readily than the physician, and should be made known in order that we may acquire any possible evidence on the subject that may aid us in combating a disease that has so many helpless victims to its credit.

Cutaneous epithelioma occurs chiefly on the face and head, these localities furnishing the site of eighty-five per cent of all the epitheliomata occurring on the surface of the body. There are nine points on the face and head recognized as the favorite site of the disease. Of these the lips are attacked in over fifty-five per cent of the cases, so that epithelioma of the lip, it will be seen, furnishes between forty and fifty per cent of all the cutaneous cancers, and by its frequency alone becomes an important affection.

Epithelioma of the lip generally occurs on one side of the median line; the left side is rather more often affected. It usually begins as a well-defined nodular thickening just at the junction of skin and mucous membrane. This thickening soon becomes an evident prominence, and can be felt to infiltrate the surrounding tissues. The growth tends to spread toward the surface, where its nature soon becomes apparent. The epidermis is at first preserved; it is generally very thin, smooth and glistening, and reveals the presence of a net-work of distended capillaries. The surface will vary; sometimes it has a smooth, oval shape, or it may be segmented or raised up in minute nodular prominences. Its consistence is usually dense, here and there of a cartilaginous feeling, but occasionally presenting areas of softening. The majority begin to ulcerate in the course of a few months, but may not do so for years. The destruction of tissue may either begin spontaneously in the interior of the tumor, or, what is more frequent, the external layer of epithelium is raised by a superficial hemorrhage, and losing its vitality is easily destroyed by the most insignificant traumatism, and the result is a superficial erosion without marked loss of substance. The ulceration now presents a reddish granular surface covered with minute areas of hemorrhagic infiltration. Contact with the atmosphere soon results in the formation of a dirty brownish crust which when removed causes a little bleeding; under the crust is a semi-purulent slimy deposit, which in turn dries up and forms a new crust.

When the ulceration starts from within outward we have quite a different appearance. The central portion assumes the character of a dusky blue swelling, surrounded by an area of hyperemia and of edema at the periphery. There is local heat and pain, softening and fluctuation can be made out, and finally the infiltration breaks down, resembling the development of an abscess. The base is seen sprinkled with small milk-white prominences shining like mother of pearl, and an absolute characteristic of cutaneous cancer. The edges are infiltrated and undermined.

When ulceration has once set in there is a rapid increase in growth, and in a remarkably short period of time the entire lip may be destroyed and the adjoining tissues invaded. The nearest chain of lymph-glands are the seat of deposits before any extensive local destruction begins, though they become involved at a much later period in this form of cancer than in other localities or organs, such as the breast. It is usually two to four years before enlargement of the neighboring glands can be detected, but it must be borne in mind that these glands when so recognized are already several times their normal size. The process on the other hand may be marked by evident glandular deposits in three to five months from the first appearance of the disease. Metastases are, however, of great rarity, and when occurring are generally found in near rather than remote organs. Death is therefore rarely due to general manifestations of cancer, but is consequent on exhaustion due to prolonged absorption of septic materials and disturbances of nutrition.

As regards the diagnosis, a typical case can scarcely be mistaken for anything else; the combination of the indolent ulceration and characteristic infiltration shading off into the surrounding tissues without a definite demarkation stamps the condition as epithelioma. Cancer of the lip may be mistaken for a simple wart where no ulceration occurred, or, what is more likely, a primary chancre of the lip, for we know of late years that the occurrence of extra-genital chancres is much more common than is generally supposed. Mr. Treves has given a table of the differential diagnosis that is sufficiently instructive to be given in full:

Chancre. Occurs at any age. More frequently in females. Rather more frequently on upper lip. Painless. Regularly outlined smooth elevation if seen before ulceration has commenced. Induration (if present) distinctly circumscribed. Induration precedes ulceration. Develops in days or weeks. Implication of a number of glands simultaneously within a short time of appearance of the chancre. No perceptible smell. Secondary syphilides—*e. g.*, roseola, plaques, etc. History of exposure to syphilis. Slight elevation of temperature common. Yields readily to mercury.

Epithelioma. Occurs after forty years of age. Almost invariably in males. Almost invariably on lower lip. Often lancinating pain. Irregularly outlined ragged prominence or ulcer with everted edges. Induration not uniform, varies in different parts, and is more diffuse. Induration follows ulceration. May be months in developing. Glands implicated one by one months after appearance of epithelioma. Smell often offensive. No secondary syphilides. No history of exposure to syphilis. Temperature normal. Unchanged for better by mercury.

As regards the treatment, there is only one—thorough excision with the knife provided the condition is still operable. The extensive forms require complicated plastic operations whose technical details I will not inflict on this audience. In the earlier cases, where no glandular infection has occurred, the classical V-shaped excision of the entire thickness of that portion of the lip affected is a very simple and satisfactory procedure attended with perfect cosmetic results, the scar not being visible except at close range, and the rosebud appearance first presented by the mouth soon disappears as the lip stretches. It can be perfectly and painlessly performed under two per cent cocain anesthesia. The amount of healthy tissue to be removed varies with the extent of the infiltration and the rapidity of the growth. Usually not less than a quarter of an inch on either side is taken away. The chief point of importance in the union of the lip is to secure perfect apposition of the vermilion border. As the parts are rendered anemic by pressure during the operation the recognition is not always easy, and a preliminary study of the peculiarities of the lip's outlines prior to any interference is desirable. The sutures should be of fine silk, and if removed quite early will leave no scar. Caustics should never be employed in treating this form of cancer, and should in general be allowed to become the monopoly of charlatans.

Prognosis. It may be said in general that cancer of the lip when removed at an early period of its existence is in a large proportion of cases forever eradicated, but if allowed to gain any headway is seldom amenable to permanent cure by operation. The prognosis differs, however, considerably with the variety of the cancer and with the individual. A very superficial warty growth developing first in advanced life, say after seventy, may persist as such or with very little change during the individual's lifetime, while a cancer in a man of forty that begins to ulcerate almost as soon as it makes its appearance will make such progress that in a year or less its advances are beyond surgical relief.—*Dental Cosmos*, *June*, *1897*.

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THE CLINIC. By E. P. Beadles, D.D.S., Danville, Va. Ocular demonstration is the best teacher. When a child sees a thing he will remember it easier than if only told about it. Men are simply grown-up children. A desire to learn something new is the foundation upon which all of our dental associations rest. The clinic has been the favorite method of imparting knowledge. Many men attend the annual meeting for the clinic alone. They can read the papers and discussions in the journals, but cannot see the operations. This being true, the very best methods for conducting clinics should be devised. It is evident that the plans which have been in use by most of our societies have served their day. With a small number present, each man may be able to see what is going on; with a large number present, nobody gets any satisfaction, the operator is crowded and worried, often failing to do himself justice.

The idea should be, not to have so many clinics, not so many operators, but good ones. Some men can teach, others cannot. There is a secret in being able to impart knowledge, to explain a thing so that the hearer may go home and perform the thing for himself. If those who have our clinics in charge for this year will select a few good men of known experience as operators and with ability to tell what they know, and will carry out the following rules, success will be theirs:—1. Have provided only one chair, and have that placed upon a raised platform near the president's seat. 2. Have only one clinic in progress at one time. 3. Let the society be in regular session during the clinic, with the president and other officers in their places. 4. Let each operator furnish beforehand to the manager of the clinic a list of whatever he needs to carry out his work. 5. Have placed on the platform a good blackboard.

Now with the members in their places the clinician is introduced and his intended operation announced. With the patient in the chair and with free use of the blackboard, he explains fully what he intends to do. At a certain time those who wish to examine the case are allowed to come up, one or two at a time; this over, the operator proceeds with his work. If it will consume some time another subject may be taken up by the association, business transacted or a paper read, with the understanding that the operator can have the attention of the members whenever he desires it.

We are not students at college, and do not need to see all operations right through to be able to perform them; a suggestion, an illustration, an explanation may be all that is needed in many cases, or a question asked and answered when all can hear at once. The manager will be able to do his work with greater satisfaction, having only one clinic on hand at a time. By the old plan he is at the beck and call of every operator, and is wanted in a dozen places at once. But possibly the most important point covered by the adoption of this plan will be the effect upon the operator. As it is now, good men often refuse to clinic, well knowing the difficulties under which they must labor. The operator knows that at best he can explain his method to a few only, and perchance the man next to him may be showing something very novel, and has the "crowd." The first operator has spent time and trouble to get ready, and is showing something really valuable, but there is no one to see it. He finishes in silence, steals off out of sight wishing "he hadn't."

By the plan here outlined no one who has been invited to clinic will be neglected. He will have the ear of the entire association, he will feel stimulated to do his best, and knowing this will prepare his best. Our prominent men will feel it worth their while to accept invitations to clinic, everything will be done in an orderly way and "satisfaction guaranteed."—*The Dental Cosmos, June, 1897.*

* * *

THE GENERAL CONSIDERATION OF PLATE WORK. By W. M. Bartlett, D.D.S., St. Louis, Mo. Read at St. Louis Dental Society. Last year there appeared in the *Ohio Dental Journal* an article headed "The Way to Elevate Dentistry to a Profession." The writer says that to accomplish this dentists should discontinue that part of the mechanical branch of dentistry which pertains to the making of plates, and should turn this class of work over to some person who has learned the trade of plate-making, just as a surgeon turns his patient over to a cork-leg maker after he has amputated a limb. He says that professional dentists should only prepare mouths for plates, and then their duties in that line should cease. Why should they not prepare cavities for gold and send their patients to a gold pounder, just as they would send their patients to a plate maker? To properly prepare a mouth for a successful plate one must be a successful plate maker himself, and the idea of the tooth-filling dentist as to how the mouth should be prepared might not meet the approval of the plate maker. Many a poor devil who has had a limb taken off by a surgeon of no mechanical ideas has had to go through life without the aid of an artificial one, while had that surgeon made a study of cork legs he would have left a stump which would have met all the requirements.

The gentleman seems to think if he should be found making plates in his office he would lose his professional standing. I do not think that a man who makes a study of both branches of dentistry will lose his professional standing any sooner than one who devotes his whole attention to operative dentistry. I say to be a successful dentist one should make himself as proficient as possible in both branches, and in doing so he need have no fear of losing either his professional or social standing.

Again, I do not think one branch is to be looked down upon more than the other. The man who makes a success of the one is entitled to as much praise and as high standing in the profession as he who makes a success of the other. The advance of dentistry to its standing of to-day is wholly due to the men who were thorough mechanics, as they have done more to elevate the profession than those who have had only one idea. It was the dentist who was a mechanic who mastered the science of orthodontia. 'Twas the man who was a mechanic who gave us our first crowns. And all the numerous advances made in dentistry in recent years—advances which have really placed the calling of dentistry in the rank of a profession—originated with men of mechanical ability who first began to develop their mechanical ideas by making plates in some laboratory such as our fine gentlemen of to-day seem to regard as a disgraceful addition to their offices.

I am sorry to see dentists as a whole losing their interest in the plate-making department. I say plate-making department, because I think it is the only way to distinguish the two branches, as one is as much mechanical as the other. The only reason I can ascribe for such a state of things is that it takes longer to become proficient in the art of plate-making than in that of tooth-filling. This is easily shown by the work done in our colleges. A green student may enter a college, and after taking three courses I venture to say that he can fill a tooth that would do him credit and make at a plate that would do him discredit. I say make at a plate. I need not go that far, because he can hardly take an impression to make a plate upon.

Another cause I can lay at the doors of our dental colleges. They do not make the proper attempt to teach this branch of dentistry. The students do not seem to take to it as they do to filling teeth. They would take to it if they were compelled to make, say ten plates before they could come up for examinations, just as most colleges exact a certain number of fillings. It is true that if the colleges exacted ten plates from each student I fear they would play a losing game, and, no doubt, this is one of the chief reasons why colleges do not compel students to take a greater interest in such work, fearing that the failures would soon bankrupt them. Not only are they not exacting enough in regard to their students, but in the past few years they have cut down lectures in mechanical dentistry (as they call it) to only two sessions. If a professor can lecture before a class for three sessions on tooth-filling, one could surely lecture on plate-making and all its side branches for four sessions. As a rule, except the professor, there is no one capable of teaching this branch as it should be taught. In most of our colleges they have demonstrators whose knowledge of the subject is very shallow. Generally they are kept-over graduates on a salary ranging from twenty-five to fifty dollars a month, so that it is no wonder that dentists look down on this branch as degrading to the profession.

Taking into consideration the lack of proficiency of six-tenths of our graduates of to-day in this branch of dentistry, it is not to be wondered at that their failures in the making of gold, porcelain and rubber plates, properly constructed appliances for the correction of irregularities of the teeth, bridges, crowns and numerous other devices disgust them with it and force them to come out and condemn it as a degradation to dentistry.

It is a sorry state of affairs that we have come to this, and the sooner we cease to aim at such a high standing—so high that we are asked to discard the main prop of our calling to attain professional standing—the better, for upon mechanism rests the further claims which we as dentists wish to advance.—*Dental Review, June, 1897.*

* * *

DR. SCHROEDER'S EXPERIMENTS WITH FORMALIN. The following are notes from a paper read before a meeting of dentists at Hanover, Germany: Much of the present theme has been given before the last gathering of German naturalists, but I deem it important to detail to you some of the experiments which I have conducted with formalin, since many useful medications, I hope, will soon be made from this substance. If flowers be placed in a solution of formalin, they will keep for a considerable period; the color of the flowers does not withstand the action or influence of the solution, but they remain fresh and retain their perfume. The yellow posies preserve their color upwards of two years when subjected to a solution of formalin. Formalin has a peculiar influence on hens' eggs; if placed in this liquid the albumen of the egg becomes a thin fluid, while the yolk of the egg is converted into a hard substance as though it had been subjected to boiling water. Upon immersing the egg in boiling water, even for a long time, the albumen does not coagulate. Another property of formalin, besides its antiseptic powers, is that it acts upon animal flesh, causing it to become tough and very hard, without inducing any change of the microscopic structure or causing any contraction or shrinkage. This calf's heart which I show has been soaked in formalin; it has no disagreeable odor and is sufficiently hard to admit of cutting with a knife.

Relative to the employment of formalin in the practice of dentistry, I can say but little at this time, as my experiments thus far have been foreign to dental operations. If you apply this solution upon a diseased pulp it institutes great pain for upwards of two hours and even for several days. I have used it with suppurating pulps with excellent results. The formalin has too decided an action upon living pulps, but if we add a sparing amount of Amyloform the pain soon subsides and the real action of the formalin is not impaired. Later I experimented with a mixture of Kobalt, with a slight amount of the amyloform, and in this case the pulp was painlessly destroyed. I have learned that in order to get the full strength of the formalin it must be kept free from the contact of air, and I would recommend that you store it in a small bottle where you can from time to time add to its fresh quantities.

I employ formalin in all cases of putrescent pulps, in a day or two the canal-contents are absolutely odorless. In cases of this kind it is not necessary to remove by any mechanical method the putridity, but merely place a drop of the formalin in the canal and by means of a broach drive the medication further up the canal. I advise that you be very careful not to bring this agent upon the lips or gums of the patient, as its influence is widespread and will cause the skin to peel off in small pieces. After the canal ceases to yield a fetid odor, wash out the contents and fill the root with formalin and cement or plaster-of-Paris. I have employed this method for three years and during this period have registered no ill effects.

Dr. Kirchoff employs formalin when amputating pulps in bicuspids and molars. When the coronal end of the pulp is exposed he applies to it a mixture of formalin and zinc-oxid, then covers this treatment with cement and proceeds to build over all the permanent filling. He has treated teeth thus for some months and is meeting with great success.—Trans. by Dr. B. J. Cigrand, from *Deutsche Monatsschrift fuer Zahnheilkunde, June, 1897.*

Calcium Permanganate in Dental Surgery.—As a powerful and at the same time harmless disinfectant, d'Almen considers that calcium permanganate holds an important place in dental surgery, particularly as affording a means of obtaining perfect antisepsis, both before and after operation. Employed as a gargle in 2 per cent solution, it is most serviceable after extensive operations in the buccal cavity.—*L'Odontol.*

The Stomach During Sleep.—Dr. Schule tells us that from examination of the contents of the stomach obtained in sleep, evidence is forthcoming that acidity is greater during this period and motility lessened. Persons with digestive trouble, especially those suffering from hyperacidity, should not sleep immediately after eating. This also seems to us to be a further argument, if one were needed, in favor of cleansing the teeth before retiring.

How to Recognize Eyestrain.—Patients suffering from eyestrain frequently have headache, the pain being located in the eyeballs and in the frontal region. Headache from nasal disease is more likely to be in the morning on awakening, while headache from eyestrain comes on later in the day, after having used the eyes. Symptoms of irritation of the eye are an indication of eyestrain; the patient complains of burning, itching, and frequently of watering of the eyes, having used them for some close work, such as reading or sewing. Recurring styes, chalagions, if not clearly traced to some general dyscrasia, are almost always due to eyestrain. In persons between the ages of forty and fifty, drawing in the eyes, lids running together, inability to use the eyes at night, are the first symptoms of presbyopia, commonly called "old sight."—*Elec. Med. Monthly.*

Letters.

MISSOURI STATE ASSOCIATION MEETING.

St. Louis, July 13, 1897.

To the Editor of the Digest,

Dear Doctor: The meeting of the Missouri State Dental Association, held at Pertle Springs, July 6 to 9, was one of the best meetings ever held in the state, notwithstanding the intense heat. The papers read were all good and created a great amount of discussion. The young men of the profession outnumbered the older members to such an extent that it seemed to be a young men's meeting. Nine papers were read, seven of which were by young men who had never presented a paper before. The papers will all be published in the Digest.

Among the old war horses who never miss a meeting were Jas. A. Price (the only charter member present), J. F. McWilliams, A. C. Griggs, D. J. McMillen, Wm. Conrad, Frank Slater, J. T. Fry, W. W. Birkhead, and a few others not quite so old.

Our new State Board of Dental Examiners was called to Jefferson City on Monday, July 5, by the Governor, where the board was organized. Dr. W. M. Bartlett, of St. Louis, was elected president, and Dr. S. C. A. Ruby, of Clinton, secretary. The board will hold another meeting in St. Louis early in September, at which time they expect every dentist in the state who can lawfully do so to register.

Owing to the extreme hot weather the society adjourned on Thursday at 11 p. m., to meet at Meramec Highlands, fifteen miles west of St. Louis, on Tuesday after the 4th of July, 1898. The following are the officers-elect for this year:—Dr. Frank Slater, President; Dr. F. M. Fulkerson, 1st Vice-President; Dr. H. A. Cress, 2d Vice-President. Executive Committee, Drs. J. H. Kennerly, D. B. Lindsley, F. F. Fletcher. Board of Censors, Drs. B. L. Thorp, J. T. Fry, R. R. Vaughan. Committee on Ethics, Drs. W. F. Sharp, F. H. Achelpohl, E. B. Crain. Publication Committee, Drs. J. D. Patterson and H. S. Lowry. Committee on New Appliances, Dr. F. F. Fletcher. Supervisor of Clinics, Dr. William Conrad.

Yours fraternally, Missouri.

PHILADELPHIA LETTER.

PHILADELPHIA, July 17, 1897.

To the Editor of the Digest,

DEAR EDITOR:—I ran up against a fellow dentist in the street and his greeting was "I say, have you seen Crouse? He is in town." "No, I have not seen him. It will not surprise me to hear next week he is in Oregon." The next day a dentist said "Dr. Crouse was in my office. He was announced as wishing to see me for two minutes. He certainly did not stay five, and in that time he talked protection, supply, union of the American and Southern, piano-wire broaches, porcelain teeth, et cetera. After he had gone, a lady in the reception room, who had been a listener, remarked "I'll bet that man just loves to fight. I should want him on my side every time."

The editor of the *Dental Cosmos*, in his letter of June 20th to the DIGEST, takes exceptions to the contribution of "your anonymous Quaker correspondent." As Quaker is a regular correspondent to the DIGEST and well known to its publisher, his communications are not anonymous. To show that the editor of the *Dental Cosmos* is prone to misapprehensions in regard to anonymous correspondence, we quote from the *Dental Tribune* of March 4th, 1893. "In publishing a notice of the *Tribune* the editor of the *Cosmos* discusses some of its contents in the following terms: 'We question the propriety of admitting the kind of matter embodied in the New York Letter in the issue of January 14th, for be the statements there made true or untrue, the innuendoes placed upon them are in any event scurrilous, and their anonymous character only serves to intensify their unrighteousness.' We do not care to discuss the question of the propriety of publishing 'anonymous' communications. The *Tribune* has never done so and probably never will. The name of the author of the New York Letter is known, hence his communications are not anonymous; he is one of the most honorable members of the profession in New York."

Articles frequently appear under the head of "editorial matter" which were not written by the editor of the journal in which they appear. Such articles are quite as much anonymous as the communications from the Quaker.

The statements in the DIGEST's Philadelphia letter, to which the editor of the *Cosmos* objects, are very plain and capable of a direct denial if they are untrue, and when a gentleman writes an answer of a page of printed matter, without taking the trouble to make such a denial, most people would believe that the assertions were true, and if there were any further proof needed to justify the statement in my previous communication, it could probably be found in the tone of the reply and in the coarse epithets which have been used as a substitute for direct statement. Your readers will be perfectly able to determine the weight which is due to a reply couched in the terms of this one, terms which are not often heard in discussions among gentlemen. QUAKER.

ST. LOUIS LETTER.

ST. LOUIS, July 16, 1897.

Dear Digest:

There is a tradition over here in Missouri that when the fathers of dentistry of our state met to form an association they decided to hold the annual meetings immediately after the Fourth of July, because at that time the farmers are busy with the harvest and the country dentist can be absent from his office with a quiet mind. To be sure we discovered long ago that it is not a good time for the meeting of the state association, because we are pretty sure to have the hottest days and nights of the season between the first and fifteenth of July, but so bound are we by this tradition that the annual resolution to change the time of meeting is always voted down or tabled, and we adjourn to meet next July and suffer again. The only possible release for us rests with the country member himself. The city dentist is rather glad of an excuse to get out of town for a few days just at this time. He has had two months or more of rushing to finish work for patients who are going away for the summer, and is glad to get away from the office. He has probably attended the meetings of two or three neighboring states earlier in the season and does not feel it a serious loss if the heat makes clinics almost an impossibility and earnest discussion too much labor to be indulged in. But to the country member, who has no local society, who cannot go to several state meetings, and is loyal to our own association, it is a loss, and to him we must look for deliverance from this tradition. Of course, it is a poor fellow, whether from country or city, who can go to any such meeting of dentists at any season and not learn something that will help him in his work, but if we want our state meeting to be the greatest possible help to every member we must have it at a season when every member is at his best and has some energy to spare for the interest of his profession.

We have just spent the three hottest days of the season at Pertle Springs, at the meeting of our Missouri State Association. It was so hot that most of us could neither sleep nor eat and we felt so impatient at the heat and general discomfort that we wanted only to get through and go home. As the extreme high temperature prevailed all over the country we could not blame our place of meeting for our sufferings, and yet the resolution to change the time of meeting was "laid upon the table."

However, I would not have you think that we accomplished nothing at our meeting. There are always a few energetic souls who do their duty regardless of the weather, and thanks to these we had some good clinics and papers. We even had our regular little scrap about the colleges, but fortunately there was a peacemaker from over in Kansas with us, and the two friends who were calling each other bad names at the close of one session were sitting together in great good humor at the opening of the next.

Our own irrepressible was suppressed for a moment, but we could not endure the monotony which followed, so a treaty of peace was arranged and he was soon running the meeting to the delight of "the boys."

Our new state board held their first meeting and laid out their plans for work at this meeting of the association. There is a general feeling of satisfaction with the appointments made by the Governor for this board and a desire to assist them in every way possible. The new law will have a favorable start in such capable hands.

We were cheered to see our old friend Gray and hear his voice again. He deserted us for Tennessee eight years ago, but comes back looking so prosperous and happy that we must forgive him. We had one visitor from Texas, another from Arkansas and Kansas, but not one from Illinois. When we heard of the heat in Chicago we did wish you had joined us at Pertle Springs, but it was too late then to send for you. Next year we are to meet at Meramec Highlands, near St. Louis, when we hope you will be wise enough to make your plans to be with us instead of staying in Chicago during the heat.

I have not told you a word of our honored president, Dr. Orr, nor how well Dr. Price, our faithful treasurer and retiring committee on law looked, nor what delightful wives some of our young men have, but you should have been there to see all this for yourself. With best wishes for next time,

Yours truly, St. Louis.

NEW YORK LETTER.

New York, July 16, 1897.

To the Editor of the Digest,

Mr. Editor:—Larger New York is 98°. Hot! But the steamers sail all the same, carrying many weary dentists. Dr. Bodecker and family head the list, including the newly fledged dentist, his oldest son, graduated this season from Ann Arbor. The young doctor goes to Moscow to attend the International Medical Congress, returning to the German University for special lectures. During the summer the Doctor senior will attend to the needs of the Imperial Family dentally. He has taken a new and fine outfit of pure American manufacture for the occasion. None of us is too modest to decline such an opportunity, although these things do not carry the eclat that they did when Dr. Thomas Evans first secured the golden goose, for out of it he has secured the golden egg, that counts as nothing else does in this age of gold.

We are reminded that Dr. Thomas' wife's death was announced lately in the New York *Herald.* All earthly honors and treasures grow pale under such a loss. May the Doctor have the only source of comfort which can really bear the name of comfort, and that is the divine.

Dr. Jarvie and daughter also go to England for a wheeling over the roads of Old England. Dr. Benson and wife are taking an annual continental tour. This has proved a satisfactory trip in point of health. For several years phthisis sought for a fatal grip on him, but it has been foiled. Dr. B. F. Hodson, with son and daughter, now young man and woman, are off for sea and old country scenes. Dr. Bonwill gave us a parting call prior to his four months' travel in many lands. He goes primarily to be a guest of the Court dentist at St. Petersburg and will give an exhibition of all his inventions and also clinics of his chief features of practice. Dr. Bonwill is truly a marvel of genius, but we are reminded of the oft-repeated quotation that our dear coworker, Atkinson, so frequently and unreservedly emphasized—"What have we that we have not received?" We think this is far too much neglected, i. e., to remember to give praise to him who is the giver of every good gift. Humanity is not the crowning virtue of mankind. However, we are glad with Dr. Bonwill that he has gotten a tangible reward for his diligence. Dr. Hardy, of Summit, New Jersey, will visit Moscow during the summer, while the Congress is in session.

We recently witnessed a very interesting operation by Dr. Lenox Curtis for a patient of Dr. Hardy, the removal of a bony cyst extending from the center to nearly the extreme end of the superior maxillary. It was successful, only cocain injection being employed. Dr. Curtis will summer with his wife in the upper Catskills.

Illustrated journalism is giving us both the outside views of proprietors and the inside exhibits of their offices. Quite a novelty. We like it, for we have advocated it, and it is well done. Both Bonwill and Leon Williams make a good showing, they are an ornament to our profession and we have not a few more. We don't think as some do, that we should wait till we are out of sight. Again let us say, had we a journal we should give something in pictures that would make all our friends, though on the editorial page we might possibly dissipate some of the good feeling. We get a little chance as a letter writer, and we are not selfish—we don't want the whole world. Editorials on horseback are piquant, and their replies also. We do not think editorial virility is anything that it should be, for there are subjects that should be met with a strong line of exposure and defense; things are sprouting and there will be an awful harvest. Some one says, this is putting it strong. Well, we mean it. We have had facts confided to us that we are not going to use, but they will surely come to light.

We see the appointed place for hiving the hornets is Atlantic City. Their program is certainly unique and promising. Rumor says there is not much rush for the mountains. We forgot to say that Jersey promises a full illustrated account of their annual meeting in the journals; it ought to be fresh reading for the dog-days.

There is much on tap for the summer meetings and we hope for results that will assist advanced movements. There are many things which should be done. The offer of the Army and Navy Museum should not go by default, nor a once-in-four-years' meeting at Washington in September or October.

We hear that Professor Taft has been very sick with pneumonia, and hope he is up and out again. "Good men don't all die young." Magitot's place is vacant; his writings have been emphasized on various subjects in our interest. It was our pleasure to receive from him his book, "The Maladies of the Teeth," which was translated by a physician, Dr. C. F. Mills, and published either in the *Archives* or the *Western Dental Journal*. Dr. Ingersoll, another of our faithful and very industrious coworkers, has joined the increasing throng beyond. Such men are examples for our younger fraternity to follow. Strange how few are really such.

Eighty-nine years and still in practice proves that all dentists do not die young. Dr. Avery, as seen in the July number of the *International*, gives a rare face at such an advanced age; we think it suggestive of prudent living as well as a busy life.

The editorial of the same journal we would say is worthy of consideration, coming as it does from the president of the American. The remodelling on "new lines" stands out to the front, also ignoring the legislative spirit and keeping directly in the interests of the object of associative purpose along the pathway of professional growth. We emphasize the word professional, for we are bold to say that it has been trailed deeply in the slime of selfish politics, and the quicker the past can be buried out of sight the better.

There is a strong desire for the attainments of intellectual simplicity, but we were never further from it than now, as can be seen in the discussions on "The Treatment of Devitalized Teeth," in the July number of the *International*. If this is to come of Stomatology it is about time to call a halt. Let us have ability, pure and simple, demonstrated, and then we shall hope to deliver the poor suffering patients into the hands of a younger and wiser coming profession. We see a possibility in the thought of sections bringing demonstrated practice on the simplest lines. Let us get our offices rid of the drug-shop odor. It is not needed; we have evidences of rare talent, let us encourage it.

Dr. Williams' reply to Dr. Andrews in the July *Cosmos* is a matter of much comment in and about Greater New York. Very few know or suspect the cat in the meal; there surely is one, but we do not think Dr. Williams knows the trick. Though he may not know it, it does not destroy the force of his reply.

Cordially, NEW YORK.

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

THE MEETINGS AT OLD POINT COMFORT.

The time for these meetings is near at hand, and from present indications there will be features of unusual interest and importance. The presentation of the work of the sections promises to be much better than usual. The various associations convening there will bring together the representative men from all parts of the country. The question of forming a national organization truly representative of the whole profession will be decided. Altogether it is a meeting which no one can afford to miss, and we would urge you to attend.

DIPLOMAS WHILE YOU WAIT.

The following notice recently appeared in a Texas paper:

Personal. Workers desiring to earn quickly degree of M.D. or D.D.S., address Lock Box 196, Chicago, Ill.

A dental student, who shall be nameless, thought he would investigate and so wrote to the address given. He received the following letter in reply:

J. Armstrong, M.D., President and Treasurer. Chas. M. Hovey, L.L.D., Secretary.
J. H. Randall, Ph.D., M.D., Vice-President.

INDEPENDENT MEDICAL COLLEGE.
Incorporated Under the Laws of the State of Illinois.
PEOPLE'S INSTITUTE, COR. VAN BUREN AND LEAVITT STREETS.

Mr. — ———— Chicago, July 2, 1897.

Dear Sir:—Yours inquiring how to secure the degree of D.D.S. received. The right to any degree should depend upon the scholarship and ability of the person seeking it. We have become aware that there are a great many students of medicine and dentistry who have spent much time and been to considerable expense with a preceptor or in college to prepare themselves to earn a livelihood, but from some turn in their affairs were unable to complete the intended course. A large percentage of them are able and worthy and only need proper encouragement to get in a way of self support instead of waiting in idleness for the impossible to happen so they can start on strictly technical lines.

They have been diligent students but lack of means prevented them from getting far enough advanced to graduate and get the degree sought conferred upon them. We are satisfied from long experience in educational work that many of them are really better qualified to conduct a safe practice than hundreds who have graduated after taking a four years' course. Independent Medical College has taken a solid stand in behalf of such students and has opened a way for them to graduate on furnishing proof of attainments either in Dentistry or Medicine satisfactory to its faculty. If not up to where they ought to be it furnishes them an opportunity to rapidly acquire the knowledge they may lack by giving them instruction day time or evenings, by lectures and clinics at the college, or a practical course by mail. The course can be commenced at any time. The time you will have to give to study before you can graduate will depend on your present knowledge. We will put you through as fast as you can go. We will be pleased to give you any further information you desire or would be pleased to have you call and see us.

Very truly yours,

J. H. RANDALL, Ph. D., D.D.S., M.D.

A FEW CONSIDERATIONS IN THE MANAGEMENT OF PROXIMAL CAVITIES IN MOLARS AND BICUSPIDS.

Under the above heading we publish in this issue a paper by Dr. C. N. Johnson. The able plea therein contained for better or more thorough preparation of cavities, where decay has taken place on the approximal surfaces of molars and bicuspids, can be studied to advantage by a very large majority of practitioners of the present day.

We published a paper by Dr. G. V. Black in the February issue, entitled "Recent Improvements in Filling Teeth." Both this paper and the one by Dr. Johnson have in view the same thing, viz., a better or more thorough preparation of the proximal surfaces. The paper by Dr. Black took up the question of the anatomical relations of the teeth to each other and to surrounding parts, the physical characteristics of the teeth and their ability to withstand stress, the cause and nature of dental caries, the plan of manipulation and the material to be used in filling teeth. Furthermore, a cause was given for the loss of teeth from destruction of the sockets (pyorrhea).

Although he raised four or five of the most important questions connected with dentistry for discussion, the chief point of his paper related to the treatment of the proximal surfaces. He advocated contouring the interproximal space when there is a disposition of the proximal surfaces of the teeth to caries. That is, he advised cutting away the entire proximal surface of tooth substance clear to the free margin of the gum; the buccal and lingual surfaces also are to be cut away sufficiently to place the line of margin so it will be constantly cleansed by the food in process of mastication, and the parts thus removed are to be restored with cohesive gold, contouring sufficiently to protect the interproximal space, and so shaping that the excursions of food will keep the surface clean.

The paper in this issue by Dr. Johnson shows that he takes the same extreme views and advocates removing the unaffected tooth substance to and beyond the free margins of the gums, buccal and lingual, so that no portion of the tooth substance on the proximal surfaces shall be left exposed to the influences of decay, and a perfect contour or restoration of the teeth to their original form by cohesive gold. Dr. Johnson goes more into the detail of shaping or forming the cavity than Dr. Black, illustrating his theory by cuts and descriptions which should be studied carefully. The subject of a better understanding of the shaping of cavities, so as to result in the greatest amount of permanency, is sure to be one of the active topics discussed in the near future and must go with the causes of dental caries.

While we are not prepared to accept in their entirety the propositions laid down in these papers, and should not make the practice therein advocated so universal, yet comparing these propositions with what was known as the "Arthur" theory for the prevention of decay, by the making of V-shaped spaces (self-cleansing), and remembering the evil results which followed the issue of that little book, "Prevention of Decay of the Teeth," we should much prefer going to great extremes in contouring, and with cohesive gold. However, judging from continued observation for many years, not more than one out of twenty operators has the ability, either as regards skill of manipulation or power of endurance, to carry out successfully the practice advocated, called by Dr. Black "Recent Improvements in Filling Teeth," to say nothing of what per cent of the community can afford to furnish that important stimulant, money compensation, such as the strain and fatigue to the operator deserves.

Nevertheless, believing that great skill in our profession depends upon constant execution of just such service as advocated so ably by Dr. Johnson, we urge the adoption of the greatest amount of this kind of service consistent with existing circumstances, as the way to do the greatest amount of good to both operator and patient.

Our pages are open to, and we urge a free discussion of this most important subject of dentistry.

THE DENTAL REVIEW'S POLICY.

In reply to the editorial criticism made upon this journal and its editor in the July number of the *Dental Review*, we shall merely state that the last word which could be said in reply has not been said by any means. Criticism given by one journal of another, which deals with methods or principles, and which is made in no spirit of bitterness or malice, is legitimate and not unwholesome; but when it descends into personalities it is not only unprofitable, but beneath the dignity of any reputable journal.

We are surprised that our friend, the editor of the *Review*, should have so far forgotten himself in the heat of controversy as to have been betrayed into a personal attack. Had he cast his insinuations against one who is less a friend, much could have been said in reply, the opportunity is not wanting. But life is too short to be spent in exchanging billingsgate, so until our friend has recovered his equanimity the discussion will be discontinued.

THEORY VS. PRACTICE FOR STUDENTS.

In this issue will be found two papers, one by Dr. A. H. Butterfield, and the other by Dr. W. M. Bartlett, both of which are rather severe criticisms on the lack of practical training which students in dental colleges receive.

How correct these criticisms of the college training are we shall not attempt to say, but there is undoubtedly great room for improvement, and we believe that the practical training is altogether too meager. The universal use of burs in the engine to prepare cavities, and the practice of crowning badly decayed teeth, and often those which are not much decayed, has taken much of the opportunity for valuable and needful practical training away from the student. The manipulative skill acquired by the constant use of hand excavators and chisels, and the condensation of gold fillings by hand pressure are almost lost to the young men entering the profession.

It is bound to be detrimental to the student to allow him to use all the improved appliances, although they are of so great help to the practitioner, and the practical skill of the future members of the profession is bound to be lowered when the student in college is permitted to use them and thus be deprived of hand training in this branch. These time-saving adjuncts to our calling are used altogether too much by men in practice, and surely the student while in training should be compelled to do most of his work without them.

Notices.

NORTH DAKOTA STATE BOARD.

The North Dakota State Board of Dental Examiners held a meeting on June 8 and 9, at Fargo, North Dakota. The officers elected for the ensuing year were: R. B. Foster, of Grand Forks, President, and H. L. Starling, of Fargo, Secretary.

NORTHERN OHIO DENTAL SOCIETY.

At the annual meeting, held at Put-in Bay, June, 1897, the following officers were elected for the ensuing year: President, L. P. Bethel, Kent; Vice-President, L. L. Barber, Toledo; Corresponding Secretary, W. T. Jackman, Cleveland; Recording Secretary, F. W. Knowlton, Akron; Treasurer, W. H. Fowler, Painesville.

LIST OF LATEST DENTAL PATENTS.

584,839. John E. Andrews, Harrison, Ark., Dental Flask Press.
584,847. Robert H. Booty, Toronto, Canada, Automatic Plugger for Filling Teeth.
585,126. Gideon Sibley, Philadelphia, Pa. Dental Handpiece.
585,358. Frank D. Gould, Port Richmond, N. Y. Tooth Brush.
585,494. Clyde E. Williams, Springfield, Mo. Dental Engine Mallet.
585,845. Harry F. Jones, Camden, N. J. Handpiece for Dental Engines.
586,023. John Fletcher, Bristol, England. Appliance for Use in Soldering Artificial Teeth to Mouth Plates.

TIME-TABLE OF TRAINS TO OLD POINT COMFORT

Trains on the Pennsylvania Railroad leave and arrive as follows

Leave Chicago 10:30 a. m., arrive Baltimore 12:40 p. m., arrive Washington 1:42 p. m.

Leave Chicago 3:00 p. m., arrive Baltimore 6:00 p. m.

Leave Chicago 5:30 p. m., arrive Baltimore 4:15 p. m., arrive Washington 5:32 p. m.

Boats leave Baltimore, via Bay Line, 7:00 p. m., and Washington, via N. & W. D. C. S. S. Co., 7:00 p. m., arriving Old Point Comfort 7:30 a. m.

Leave Chicago 10:30 a. m., arrive Philadelphia 12:50 p. m.

Leave Chicago 3:00 p. m., arrive Philadelphia 5:47 p. m.

Leave Chicago 5:30 p. m., arrive Philadelphia 4:17 p. m.

Leave Philadelphia 11:10 p. m., arrive Old Point Comfort 8:00 a. m.

It will be seen that those taking this route can go by way of Baltimore, Washington, or Philadelphia, as the fare and-one-third rate can be obtained for any of these points. For further information address, City Passenger Agent, Pennsylvania Railroad, 248 Clark St., Chicago.

COLORADO STATE DENTAL ASSOCIATION.

Following are the clinics held by the above association at its eleventh annual meeting, at Colorado Springs, June 8-10, 1897:

Dr. W. L. Bartlett, Colorado Springs. Contour Gold Filling Without Grooves or Retaining Pits.

Dr. S. Davis, Denver. Making Sets of Instruments for Removing Deposits in Pyorrhea.

Dr. H. B Hayden, Colorado Springs. Method of Root Filling.

Dr. P. T. Smith, Denver. Gold Filling Without Rubber Dam; Non-Cohesive Foil.

Dr E. R. Warner, Denver. Illustrated Talk on Points in Practice.

Dr. W. T. Chambers, Denver. Removable Bridge

Dr. F. G. Yates, Chicago. Binding with Gold a Cuspid Tooth.

Dr. E. W. Varley, Pueblo. Obtunding Sensitive Dentin by Cataphoresis.

Dr. A. C. Watson, Denver. Making and Filling a Cavity with Gold in Artificial Tooth.

Dr. C. V. Shoop, Central City. Inserting Gold Filling in Artificial Tooth with Blow-Pipe.

Dr. W. E. Griswold, Denver. Removable Crown for Supporting Saddle Plates and Bridges.

Dr. C. F. Dodge, Denver. Combination Cement and Amalgam Filling.

Dr. W. K. Sinton, Colo. Spgs. Cement as an Aid in Anchoring Amalgam.

Dr. W. S. Twilley, Baltimore. Separating Flasks by Steam Pressure.

Dr. A. B. McGee, Denver. Immediate Regulation of Superior Cuspid Tooth by Luxation.

Dr. W. H. H. Brown, Denver. Porcelain Inlay.

Dr. A. H. Sawins, Denver. Gold Root Filling.

Dr. A. G. Dille, Denver. Gold Filling with Non-Cohesive Gold.

Dr. J. N. Chipley, Pueblo. Gold Filling with Smooth Plugger Points.

Dr. F. C. Chamberlain, Colorado Springs. Low Crown and Bridge Work.

Dr. J. H. Parsons, Boulder. Amalgam Contour Work.

Dr. B. A. McGee, Denver. Anchoring Gold Filling by Aid of Cement.

Dr. J. Allen Smith, Colorado Springs. Use of Cataphoresis in Dentistry.

Dr. L. S. Gilbert, Denver. Excising Crown, Removing Pulp, and Immediate Root Filling.

Dr. Edgar Palmer, Denver. Paper—The Value of Dental Legislation.

HENRY B. HAYDEN, Sec'y pro tem.

HARVARD DENTAL ALUMNI ASSOCIATION.

Monday, June 28, 1897, was observed as "Alumni Day," and was a unique occasion in the history of the association. Clinics and demonstrations were given at the school building, and the work of the freshmen, junior and senior classes for the past year shown. Cases of fracture of the jaw, with the patients present, were shown, and plaster casts with appliances used; likewise in cleft palate and orthodontia. One hundred and fifty-two visitors, aside from patients, were recorded on the register and then shown over the building by the reception committee. Professor Fillebrown successfully performed an operation in staphyloraphy for a child about six years of age. Dr. D. M. Clapp gave an X-Ray exhibition, showing its utility and practical value in dentistry, with patient present in chair. Various entertainments were given during the afternoon to those desiring to enjoy them—a barge ride through Cambridge, a bicycle run through the parks, and a theater party. A goodly number availed themselves of these privileges.

At the twenty-sixth annual banquet, held at Young's Hotel, Boston, at 5 o'clock, 88 persons gathered Reports were submitted showing the flourishing condition of the association. During the progress of the dinner the following officers were elected for the ensuing year: President, Joseph T. Paul, '91, Boston; Vice-President, Frederick Bradley, '86, Newport, R. I.; Secretary, Waldo E. Boardman, '86, Boston; Treasurer, Harry S. Parson, '92, Boston. Executive Committee: Waldo E. Boardman, '86, Boston; William P. Cooke, '81, Boston; Frank T. Taylor, '90, Boston. The council is composed of the officers of the association.

The oration was delivered by the guest of the evening, Rev. George Hodges, A.M., D.D., Dean of the Episcopal Theological School of Cambridge. Dean Smith, of the dental school, described the rapid growth of the school of late years and stated that $48,000 had been secured for the school in eight years. The graduating class numbered 32, and incoming freshmen class 30. During the year there were 132 students, with two post-graduates. Chas. W. Berry, A. B., spoke for the class of 1897 in a humorous vein.

WALDO E. BOARDMAN, Sec'y.

News Summary.

NEW STYPTIC.—Antipyrin and tannin rubbed together produce a sticky compound very useful as a styptic. It may be applied with a sponge.

INTERNATIONAL EXHIBITION OF DENTISTRY.—An international exhibition of dentistry, dental surgery, and hygiene of the mouth is to be held at the Marlborough Hall, Polytechnic Institute, London, in September of this year.

INJECTION OF CHLOROFORMED GUAIACOL IN SEVERE NEURALGIA.—Subcutaneous injections of 15 to 60 drops of a solution of chloroform, 10 grams, and guaiacol, 6 grams, always soothes the pain, improves the neuralgia often and occasionally cures it. The bottle should be sheltered from the light and kept in an opaque paper. The injection should be made as close as possible to the nerve trunk, once a day, or once in two or three days. These injections have also been found effective in small surgical operations as an analgesic.—*Presse Med., April 24.*

THE IDEAL MEDICAL JOURNAL.—The ideal medical journal is one not controlled by a clique, and not published in the interest of a medical school or of a faction; it should be independent, not a partisan publication. Original articles should be published and a fair price paid the authors. The publishing of the proceedings of medical societies is of doubtful propriety; we all grow weary in seeing so much trash. The editors should be leaders in reforms; should be aggressive, not negative, individuals.—*Wilmer Brinton, in Maryland Medical Journal.*

[This would also apply to dental journals.—EDITOR.]

AFRAID OF CHICAGO DENTISTS—GOVERNMENT SENDS A SOLDIER TO KANSAS CITY FOR TREATMENT.—Washington, June 29.—For some unknown reason the war department is discriminating against Chicago dentists. The following paragraph appeared in the army orders issued by the adjutant general to-day:

"Post Quartermaster Sergeant Charles Campbell, now at Fort Sheridan, Ill., will be sent to Kansas City, Mo., for dental treatment, upon completion of which he will rejoin his station at Fort Sheridan, Ill. The quartermaster's department will furnish the necessary transportation."

The transportation of this soldier to Kansas City and return will cost the government about $20.—*Times-Herald, June 30.*

PRESERVATION OF FLOWERS.—The following is a very old method of keeping flowers without loss of color: Dry some very fine, pure siliceous sand in the sun or oven; then take a wooden, tin-plate, or pasteboard box sufficiently large and deep, and place your flowers inside erect; then fill the box with sand until the last is about an inch above the top of the flowers. The sand must be run in gently so as not to break the flowers. Cover box with paper or perforated cardboard and place it in sunlight, oven or stove; continuous heat gives best results. After two or three days the flowers will be very dry, but will have lost none of their natural brilliancy.—*Jour. of Horticulture.*

ALCOHOL AND SUICIDE.—At the recent international Congress of Psychology Dr. Muller gave an interesting historic sketch of the etiology of self-murder and, by means of an elaborate series of statistics, traced to alcohol the primary cause of its marked increase of late years. The author estimates the number of suicides in Europe at 50,000 a year. thus showing that the evil is increasing at a greater rate than the population. The most favored month for suicides is June, the least December. Early morning is chosen in preference to the night; the mechanic class furnishes the largest number of subjects, and the peasant the least. Dr. Muller considers brandy the most pernicious form of alcohol, and traces to its influence the blunting of those weapons which in the struggle for life are the most necessary to sustain the conflict.—*Westminster Gazette.*

Platinum Silver Alloys.—At a recent meeting of the Chemical Society a paper was read on these alloys, and their solubility in nitric acid, by Mr. John Spiller. He found that platinum silver alloys would not dissolve as the text-books say they should. Accordingly he had made definite alloys of these metals, and treating them with pure nitric acid he found that no more than 1 per cent of platinum in the mean could be dissolved with the silver. In the discussion, Mr. Vernon Harcourt threw some doubts on the exact composition of the alloys; and Mr. Friswell suggested that the old statements were due to the use of nitric acid containing sulphur.—*Brit. Jour. Dent. Sc.*

The Press and Dental Advice.—The ladies' column in the various papers is frequently embellished with advice concerning the teeth, often good but sometimes amusing. One paper in "Teeth Don'ts" says: "Don't have a dentist use his foot-engine to remove tartar without first trying the end of a match-stick wet and dipped in powdered chalk. With rubbing and perseverance this will almost always prove successful, and the first method, if resorted to too often, is injurious." Another paper recommends for the same deposit "muriatic acid or spirit of salt," and innocently remarks, "there are very few incrustations which will resist this treatment." We can readily believe it, and would add that there are very few teeth which which would resist it also. Another paper recommends "lovely woman" to use a dentifrice composed of "quinin, seven *drachms*, powder of rhatany, three drachms, chlorat of potash, three drachms." We should like to see "lovely woman's" expression after using this bitter compound, even if she could induce any chemist to mix it for her.—*Brit. Jour. Dent. Sc.*

Pathology of Mercurial Stomatitis.—Dr. Lang comes to the following conclusions, according to the *British Medical Journal:* (1) That, in accounting for the origin of mercurial stomatitis, three factors must be considered, namely, the mercury, the local cause, and the bacteria. (2) That the ulcers develop chiefly on those parts of the mucous membrane which are exposed to pressure from the teeth, such as the edges and under surface of the tongue, the mucous membrane of the cheeks, and the edge of the gums. But he does not agree with the generally accepted view of Ricord and Fournier that these ulcers develop on the side of the mouth on which the patient lies in bed. (3) That the ulcers most frequently form in the neighborhood of the incisor and cuspid teeth of the lower jaw. (4) That the saliva has no influence whatever upon the origin of the stomatitis, the salivation being due simply to a reflex action starting from the mouth. The salivation never precedes the stomatitis, and is often entirely absent. (5) That the mercurial ulcers of the mouth are the result of a necrosis of the mucous membrane, which is brought about by the disturbance of the nutrition of the tissues, consequent upon the action of the mercury and by the pressure of the teeth on certain portions of the mucous membrane—pressure gangrene.

The Dental Digest.

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Original Contributions.

RELATIONS OF CHEMISTRY TO DENTISTRY.

By Dr. J. S. Cassidy, Covington, Ky. Read Before the American Dental Association, at Old Point Comfort, August, 1897.

Investigation of the laws which were supposed to govern observed natural phenomena was one of the favorite pursuits of learned men from the earliest historic times. Reasoning from effect to cause, as time progressed, led to many useful discoveries, probably in the same ratio to intelligence, and the laws of supply and demand, as obtains in the affairs of this day and age. The development of the ancient art of alchemy, along practical lines, was a leading civilizing influence on the people, as they gradually emerged from their simple surroundings into a clearer conception of the comforts which could be obtained from changing material bodies into more desirable or needed conditions. The inhabitants of the deserts of Lybia were, in the olden time, inadequately supplied with common salt; their alchemists accordingly manufactured a substitute from camel's dung and named it Sal Ammoniac—"Salt of Ammon"—in honor of Jupiter Ammon, whom they worshipped. Herein the Arab chemists exhibited a commendable commercial spirit; whereas their Greek and Roman contemporaries labored somewhat more in the field of pharmacy, by extracting from both mineral and vegetable sources numerous medicinal agents, thus in their practice balancing the mercenary by the professional spirit. Whatever of dentistry existed in those days must have partaken of the benefits derived from the important part played by alchemy in general therapeutics.

According to Dr. Ebers, many branches of science flourished wonderfully in ancient Egypt and were practiced by specialists of the priestly order. "Our physicians," said King Amasis to his visitor, Crœsus, "are permitted to treat only one part of the body. We have aurists, dentists and oculists, surgeons for fractures of the bone and others for internal diseases. By the ancient priestly law a dentist is not allowed to treat a deaf man, nor a surgeon for broken bones to treat a patient who is suffering from a disease of the bowels, even though he should have a first-rate knowledge of internal complaints. This law aims at securing a great deal of real and thorough knowledge—an aim, indeed, pursued with a most praiseworthy earnestness in all branches of science.'' ''I came to Egypt,'' wrote the Sybarite, ''to consult a dentist. That rude fellow, Aristomachus of Sparta, however, knocked out the defective tooth and so saved me from an operation, the thought of which had often made me tremble. On recovering consciousness, I found that three teeth had been knocked out of my mouth—the diseased one, and two others which, though healthy, would probably at some future time have caused me pain.''

During the long interregnum between the ancient Oriental and the modern European civilization there was such continuous robber warfare and rapine that the arts of peace, outside the quiet cloister, were not encouraged. There was no dental art worthy of the name and comparatively little chemical research. In fact, modern chemistry, as a science, may be said to date its birth from the discovery of oxygen; and, coincidently, dental science must claim its origin as beginning about the same time. It would be superfluous and beyond the scope of our present purpose to note the advances which these divisions of human effort have made since then. They are both concomitants of higher civilization. ''Show me,'' said Tyndall, ''the country where the greatest quantity of sulphuric acid is used, and I will tell you that its people are, above all others, the most generally enlightened.'' In like manner we may say that the people of any community, where dentistry flourishes, are of a higher order of intelligence than are those found elsewhere.

Dentistry is and should be cosmopolitan. It appropriates with due permission facts and methods from the humblest as well the most exalted occupations, and in return gives back to them a large per cent of the benefits received. Metallurgy, molding, sculpture, surgery, medicine, physics and chemistry have been appealed to not in vain; and as a consequence the accomplished dentist could point out to willing youth the best means of becoming experts in these separate vocations.

Of all these sciences that of chemistry is the most universal, since it has no limitations; all forms of matter and force must own its sway. In its domain secrecy, mystery and charlatanism are no longer tolerated; and all who will may partake freely of the benefits it has conferred and will continue to confer in increasing ratio upon mankind. To chemistry our profession is indebted in that it prepared N_2O, by which means in after years Dr. Horace Wells, a dentist, might be permitted to introduce anesthesia, the greatest boon ever conferred on suffering humanity.

And here let me say, that it does not follow that a man must thoroughly understand every department of the noble science in order to appreciate truths in chemistry which may be daily useful to him in our profession. Even a limited knowledge of the principles of chemistry enables the operator to administer that gas intelligently, knowing that N_2O supersedes the normal process of oxidation in the body, and prevents the ready elimination of its products; inducing thus the anesthesia by rapid formation and retention of CO_2; which fact of itself suggests the proper remedies for overcoming the tendency to asphyxia, which necessarily follows the inhaling of gas.

Dentists, as a rule, are not indifferent to nor ignorant of chemical processes; notwithstanding our friend, Dr. Crouse, asserted there was not a single dentist in this country who could make an accurate quantitative analysis of any dental amalgam; whereas hundreds might be named who could do so, if it were necessary. Indeed, there are many men, not professional chemists, who are able to do excellent work along lines of chemical discovery and manipulation. The recent studies of the chemical and physical properties of amalgams are of inestimable value to every dentist who thankfully takes advantage of the information derived through the labors of Dr. Black.

Moreover, not to mention the innumerable pharmaceutical preparations, our zinc oxid cements may be brought in evidence; and as some of us are sure that fillings of these materials are disposed to disintegrate more at the cervical point than elsewhere, we also think we know the true and only cause of this unfortunate disposition, in that the part under or near the gum margin is a favorite point for alkalin fermentation, such as the production of ammonia, resulting in the inevitable abstraction by it of the electro-negative substance of the cement. Some may be inclined to consider this brief allusion to cause and effect as "only a fine spun theory," but it is not; it is as susceptible of proof as any problem in mathematics.

We cannot, as dentists, escape, even if we so desire, the claims of the science of chemistry upon our earnest attention and study, for on every hand we are compelled to admit the insidious influence of its affinities to be the exciting and efficient cause of the principal disease with which we have to contend. Happily, the study of chemistry, while acquainting us with these potent influences, also points out to us within the sphere of the same science the means at hand to combat them, most beneficially provided, if we will but apply them.

No member of this—as the late Dr. Atkinson termed it—"Excelsior Association of Dentists" will doubt the culminating discovery of Dr. Miller, that at least lactic acid is developed in the mouth by the presence of bacteria and the materials necessary to their support, and also to the play of chemical affinities at the point of carious destruction; and, further, that the destroying agent acts molecularly with as definite results as pertain to any other natural phenomenon. Some years ago, when the so-called "germ theory" of disease was introduced, there were not a few who received the innovation with satisfaction; because they would not or could not understand, and therefore approve, the chemical theories of Watt. It is now, however, accepted beyond question that there is no conflict between the two theories—that bacteria are a necessary factor in fermentation, and that their only trysting-places are in the midst of extraneous material susceptible to that process, the elements of which must obey the laws of their affinities; and if, for instance, among other compounds, destructive and otherwise, lactic acid, as proven by Miller, is developed in contact with a tooth, destruction of that part will proceed molecule by molecule; so that, while it is probable that teeth, like other organs, yield to an increased non-resisting influence of a "periodic law," dental caries is *per se* a disease of purely chemical propagation. From this latter view-point the relations between chemistry and dentistry are not of the most amicable character, yet the science whose unseen minions are directly responsible for the existence of our principal enemy will inevitably furnish weapons of defense other than we as yet possess.

No wonder that dentists are perhaps unconsciously more interested in chemistry than are the members of the mother profession; at least, it would so appear by personal contact with them, and by impartial reading of medical and dental journals. One of the former recently, to cite a single example, expressed its surprise that any two acids could neutralize each other; and then went on to say, that by mixing one part of acetic acid, and one and one-half of carbolic acid, a neutral compound will result. Any tyro in organic chemistry knows that phenol is not an acid, but on the contrary is an alcohol, and that an alcohol and an acid combined will produce an ester, and water:

$$\underset{\text{Phenol}}{C_6H_5HO} + \underset{\text{Acetic acid}}{C_2H_4O_2} = \underset{\text{Phenyl acetate}}{C_6H_5C_2H_3O_2} + H_2O$$

Perhaps the worst chemical blunder ever made officially in a dental journal occurred a few years ago in a foreign periodical, wherein the editor, with the characteristic stupid arrogance of his kind, criticising a brief scientific description of ordinary combustion, wherein light is an essential accompaniment, mentioned the rusting of iron as his beau ideal of that process. We could forgive him for this, were it not that he presumed to know it all on every question of a similar nature.

It goes without saying that a foreknowledge of certain rules in chemistry is a great aid in adapting means to ends, when anything new in that line appears. For instance, in cataphoresis, we were told at first that the positive pole must be used in contact with whatever drug was employed; whereas it is well known in electrolysis that the radicals or ions of conducting-compound liquids separate in a perfectly definite manner, the positive radical being attracted to the cathode and the negative to the anode; so that we will likely obtain better results by selecting anaphoresis when we wish greater penetration of a strongly electro-negative radical. A duly certified list of comparative positive and negative classes of radicals has been known for many years, of which we are welcome to take advantage; and in return for all these favors, would it not be an act of courtesy on our part to approve, when occasion permits, certain changes in chemical nomenclature, adopted through official international committees appointed for the purpose, by the most influential scientific bodies? Our journals, it is almost unnecessary to say, editorially are fully up to, indeed, in advance of the times, but we see too often in reports of discussion in our local societies, and in some of our latest text-books, names of things and terms that shock the sensibilities of euphony and truth. Take, for example, *Potassium iodid.* Is not that name more pleasant than iodid of potash, especially when we realize that the compound contains no potash whatever?

We have been surfeited for a long time with "cocain hydrochlorate," and lately with "eucain hydrochlorate," although a generation ago it was decided that acids like hydrochloric (HCl), hydrobromic (HBr), etc., whose electro-negative radicals are elementary, confer names on salts which terminate in *ide* (the final "e" has been eliminated); therefore, the name of every salt of such acids should end in "id," as "cocain hydrochlorid." Only those acids which have compound negative radicals give names to salts ending in "ate" or "ite," as the case may be. Sulfuric acid (H_2SO_4) forms sulfates; sulfurous acid (H_2SO_3) sulfites; chloric acid ($HClo_3$) chlorates; chlorous acid ($HClo_2$) chlorites, etc.

Life is too short to nominate for consideration at this time more than one other frequently misapplied word, which is "density." We use it, do we not? as a synonym for hardness in the structural substance of teeth, instead of in its true meaning, i. e., specific gravity. Ice is harder and more compact to a cutting instrument than is liquid water, but it is less dense. The diamond, among the hardest of bodies known, is only three and one-half times as heavy as water; while pure gold is comparatively soft, although more than nineteen times as heavy as the standard, water. It is not possible to believe that the specific gravity of a tooth has anything to do with predisposition to disease, or even that compactness of calcium constituents is a condition that presents a physiological barrier to decay. While these matters may perhaps appear of small practical importance, yet surely, as we claim to be devoted disciples of pure science, we have no right to trifle with accepted nomenclature.

DOES THE PRESENT METHOD OF TEACHING BY DIDACTIC LECTURES BEST QUALIFY THE STUDENT FOR THE PRACTICE OF HIS PROFESSION?

By John S. Marshall, M. D., Chicago. Read Before the Southern Dental Association, at Old Point Comfort, August, 1897.

The spirit of the times is one of progress, and for several years this spirit of progress has been "moving upon the face of the waters" and stirring the stagnant pools of our educational institutions. The foremost educators of our land are seeking for better methods of teaching, better preparation of the knowledge to be imparted, by arranging and classifying it upon the most approved scientific plan, so that it may be the more readily comprehended and retained. Knowledge to be of value must be useful. To be useful it must be classified. When classified it is accessible and capable of being applied to the subject under consideration.

The faculties of the dental colleges have not been unmindful of their obligations to the student, nor of the spirit of the age, and have tried to keep their institutions well to the front in this "onward march of progress." They have recognized the growth of the profession in its various departments and have endeavored to keep pace with it. Many additions have been made to the course of study during the last few years, but nearly all of them have been upon the practical side, in the line of technique and laboratory work.

There is, however, great need of improvement in other directions, particularly in the present mode of teaching by didactic lectures. The teaching in this line is just the same to-day that it was fifty or sixty years ago. A few colleges have made an attempt at improvement by the introduction of other methods in combination with the lecture courses, but there has been no real advancement which can compare with the work now done in the technique rooms and laboratories. In this respect we are behind the times and need to bestir ourselves if we would maintain the reputation of the American dental colleges and the prestige of our graduates.

I shall therefore propound the question which forms the title of this paper. My reply to this question is, No! My reasons for this negative answer have grown out of a considerable practical experience, covering a number of years as teacher in medical and dental schools. I can therefore approach the subject with the feeling that I am not a novice, and that perhaps out of this experience and observation I may be able to suggest a better method of educating the students under our care than by this inadequate and antiquated method of the past. I am fully aware, however, that many of my colleagues have also felt the inadequacy of the lecture method to *instruct* and *educate* in the best sense of the terms, and of their desire for a better means of placing before the students the subjects which they desire to teach.

My first objection to the didactic lecture method of teaching is that there are very few men in the profession who have the eminent qualifications to make successful teachers under this system. The power to write eloquent sentences, to display oratorical pyrotechnics and compose brilliant climaxes are not qualifications for teaching. The orator and the stump-speaker have no place in the class-room.

Entertainment of the students by funny stories is not the highest duty of the instructor. The paramount qualifications for the office of teacher are *ability to impart knowledge* and *to teach the student how to apply it;* but how few there are who possess both these important qualifications. Many teachers are able to impart knowledge, but few have the eminent qualification for the important labor of teaching how to apply it. Knowledge without this power is like a library without a reader, "more ornamental than useful."

My second objection is based upon the undisputed fact that a large majority of the gentlemen who occupy positions as teachers in our dental schools are busy practitioners, whose time is fully occupied with professional duties, but who for the love they bear the profession are willing to give the best of the energy left them each day to preparation for the duties of the lecture-room. Not one of these gentlemen, however, would say that such effort is the best that he is capable of had he more time for preparation and more energy to put into it. This objection can never be overcome until such time as men of wealth will endow these institutions, and thus make it possible for the schools to pay their professors a salary that will be sufficient to preclude the necessity of keeping up a practice for the sake of the income. Under such circumstances the entire time of the professors could be given to the duties of teaching and original investigation; conditions which are greatly needed and devoutly to be hoped for.

Another class of teachers go before their students with evidently some preparation upon the subject to be taught, but frequently sidetrack themselves over the relation of some pet case in practice and never get back to the text again that day. While another class, all too numerous, often enter the lecture-room with little or no preparation and simply talk against time, rambling over the entire field comprehended in the curriculum, and when the students leave the lecture-room they know no more than when they entered it, while their minds have become so befogged by this *hodge-podge* to which they have listened, that they have no clear comprehension of the subject supposed to have been taught. This is not an overdrawn picture, for many of you know of like conditions and the causes which have produced them.

My third objection is based upon the fact that, no matter how eminent and well qualified the teacher may be as a lecturer, the students do not obtain such benefit from his wisdom as they have the right to expect and demand, because it is impossible for the average student, and this is the class for which we have to plan, to remember more than a few of the most striking thoughts presented in each lecture. While, on the other hand, if the student attempts to take notes he loses at least one-half of the lecture, unless he happens to be proficient in shorthand. In some of our schools the various classes have been in the habit of employing a stenographer to report each lecture upon certain subjects, and then have it printed for the use of the class, as the only means by which they could get the full benefit of the teaching.

The fourth objection which I would raise lies in the fact that, as a rule, the students show their greatest weakness at the time of examination concerning those subjects in which they have been obliged to depend largely for their information upon a course of lectures. Listening to a course of lectures, and studying the same subject from a suitable text-book, are not to be compared as a means of education.

To remedy these defects in this method of teaching, I would suggest that each lecturer should furnish to his faculty a full and complete syllabus of his entire course of lectures, and that the same be printed for the use of the students. These should be distributed to the class one lecture at a time, as may be indicated by the teacher when he goes before his class. In this way the class could readily follow the lecture during its delivery, and be relieved from the necessity of taking notes, which at best are inadequate to a good understanding of the subject. Furthermore, the class should be quizzed upon each lecture by the teacher himself, or by an instructor especially appointed for this purpose, who is in sympathy with him. The syllabus should be used in this work instead of a quiz compendium. By this plan the lecture method might be stripped of many of its objectionable features. The teaching from the lecturer's desk and the work in the quiz-room would then be uniform, and the most would be made out of this system that circumstances permit.

With these improvements in this method of teaching it would still be far from all that was needed, for many of the defects would remain without a remedy. I firmly believe that our whole system of oral teaching needs to be revolutionized by the introduction of suitable text-books and a system of recitations. To my mind the recitation system of instruction is by far the most satisfactory upon all subjects not purely clinical or manipulative. It has been my experience that students who have been required to study a certain number of pages each day from a suitably prepared text-book, with the assurance that they would be closely quizzed upon each lesson, have shown a much better understanding of the subjects studied than those who have been educated by the old system of didactic lectures. Furthermore, by the use of carefully prepared text-books a systematic plan of study is followed and the subject matter is classified and arranged in a natural order. Material prepared in this manner is much easier to comprehend and to remember, while the student is taught correct methods of thought and to reason from cause to effect.

By following the recitation method of teaching, the best instruction could be obtained from recognized authorities in the various departments to which this plan applies. The selection of the text-books might be placed in the hands of a special committee of the faculty, who should, after conference with the professors of each department, announce to the students the books that would be required for each school year.

In the selection of a faculty it has been the custom, under the old plan, to appoint the men of best minds, and of the largest experience in special departments, to work in the lecture-room; while the younger men, who have their reputations still to make, have been placed in the, to my mind, most important positions—as teachers in the laboratories and the clinic-rooms.

By the adoption of the recitation system of teaching the younger men would be placed in charge of the instruction in the recitation-room, with orders to follow the authorized text-book. The application of the knowledge thus gained should be taught in the laboratories and clinic rooms by the professors themselves, rather than by a corps of demonstrators whose knowledge of, and experience in the special subject taught is often of the most limited nature.

With such a change in our system of oral teaching I believe much greater advancement could be made by the students in the same length of time, and we should have the satisfaction of knowing that they were better qualified for the practice of their profession than by the old method.

PHENOMENA OF CATAPHORESIS.

By Weston A. Price, D.D.S., Cleveland. Read Before the American Dental Association, at Old Point Comfort, August, 1897.

In this paper I shall confine myself to the consideration of phenomena attending the application of an electric current to the human body, with and without an interposing medicament, and especially as applied to the dental organs.

There are three distinct theories as to the forces at work and their particular action in these processes, and there is such a diversity of nomenclature, and variety of methods for the application of these forces, that I shall include all the methods of applying an electric current to the dental organs for producing anesthesia, whether used in conjunction with a medicament or not. These theories are: First. The polarization of the tissue producing an inhibition of the sensory impulse. Second. Osmosis. Third. Electrolysis.

The first theory provides that when an electric current is applied to a tooth, with or without a medicament, the conditions produced are almost or entirely due to the effects of the current and not to the medicament, other than as an assistance in conducting a current. The supporters of this theory are here divided into two classes, from a difference of opinion as to the exact method of this inhibition; whether the decreased excitability is due to the polarizing effect of the current on the tissue, or to its inhibition of the normal sensory impulse by its passage through the nerves.

Prof. Neischwanger, of Chicago, has said that, owing to the liberation of hydrogen at the negative pole and of oxygen at the positive pole, there would be at these two regions, respectively, a condition of increased and decreased excitability, due to the production of an acid condition at the positive pole and an alkalin condition at the negative pole, and that the zone of neutrality would be the median of resistance; and consequently that the negative or indifferent electrode should be placed as far as possible from the polarizing electrode. The adherents of this polarization theory maintain that the amount of current used is not great enough to produce sufficient electrolysis of the medicament used to produce its effect on the tissue.

The other division of this first theory is, that a constant current applied to the dental branches of the tri-facial nerve, with the positive pole applied to the tooth, and the negative pole over the gasserian ganglion, inhibits the normal sensory impulse. The leading advocates of this theory maintain that a certain and intricately definite amount of current applied in the manner just described will produce a condition of anesthesia in the tooth, and that either too little or too much will not produce this condition. They call it "short circuiting the nerve." For its application the positive pole of the constant current is attached to the dental engine in such a manner as to make the bur the electrode, the handpiece being insulated, and the negative pole is applied over the gasserian ganglion, on the same side as the tooth to be operated upon, which is perfectly insulated. No medicament is used in either of these two processes except moisture in the former, the polarization theory to reduce the resistance of the dentin.

The next theory provides that the medicament, which is applied by the electrode, is the agent which does the work, but that it is carried in by a physical force. That some way, just as a stream of water carries sediment with it, the electric current carries the ingredients in solution with it through the solvent and through the tissue. To secure the conditions best suited for the development of this process, the positive pole is placed in the cavity or on the tissue to be anesthetized, with an interposing layer of the obtunding medicine, and the negative pole placed at any more or less remote point. Dr. Morton has said, "You may even drive solid particles into tissue, and solid particles will move through fluids by the aid of electricity." He also says, "You cannot be too sure of your osmosis."

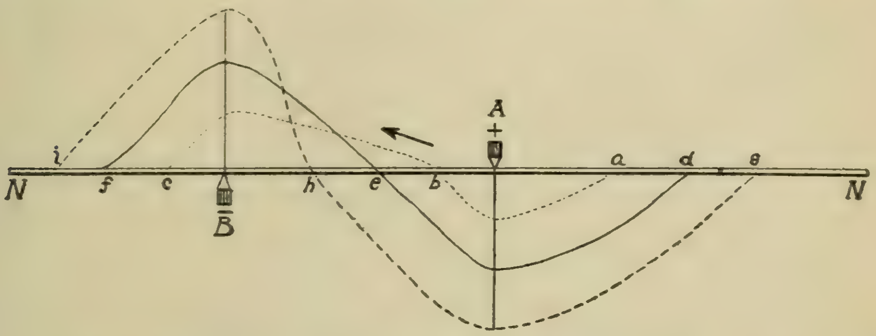
Dr. Peterson, in the International System of Electro-Therapeutics, says, "From a medical standpoint we understand by cataphoresis the introduction of medicaments by means of electricity into the body through the skin or mucous membranes. It seems to be a *purely physical process* and has nothing to do with electrolysis."

Electrolysis, the last theory, not generally accepted, provides practically that all the effect produced in passing an electric current through a medicament, as applied in cataphoresis or in any other way, is electrolytic.

As the next steps let us consider: First. The physiological effect of a constant current on nerve tissue. Second. The laws governing osmosis. Third. The laws governing electrolysis.

For the study of the first, take for convenience the sciatic nerve of a frog. Apply the electrodes of a polarizing current to two points distant from each other on the nerve. Before considering the phenomena of muscular contraction, let us observe the conditions this current produces in the nerve relative to any other irritant applied to that nerve. Suppose the irritant to be mechanical, not electrical, to prevent confusion with the polarizing current The negative pole of the polarizing current is placed nearest the muscle. The following phenomena will be observed: First. That the nerve at different points has altered excitability, at some places less than the normal amount of stimulation will produce a contraction of the muscle, while at other points it will take far more than the normal amount of stimulation to produce this contraction, due to the passage of a current. Second. It will be found that these regions of increased and decreased excitability are confined to the vicinity of the particular electrode; the region of the decreased excitability about the anode or positive electrode, and the increased excitability about the cathode or negative electrode. Third. There is a point between the electrodes of normal excitability, which point *varies* in distance from the respective electrodes, according as the current is *weak* or *strong*. Fourth. The *degree* of *decrease* or *increase* of excitability is in *direct proportion* to the strength of the polarizing current. Fifth. This condition ceases practically at the instant the current is broken.

The alteration of excitability in the region of the poles we will know as electrotonus; that at the positive pole or anode, as anelectrotonus, and that at the negative pole or cathode as catelectrotonus. These terms have been used by different physiologists to express two different conditions. In 1843 Du Bois-Reymond discovered that the passage of a constant galvanic current through a portion of a nerve produced a change in the electro-motive forces existing between the longitudinal and transverse surfaces, whereby the resulting *nerve-current* was either increased or diminished, according to the direction of the constant current. To this condition he applied the term electrotonus. It was subsequently shown by Pfluger in 1859 that a definite change in the irritability of the nerve is also caused by the passage of a constant galvanic current, and as it is intimately related to the change in the electro-motive forces he applied to this *alteration of excitability* also the term electrotonus. This will be the application of the term in this paper. He showed very clearly by the diagram the relative effects of different terms. "The abscissa line N-N represents the nerve, the decrease in the excitability of which is indicated by an ordinate directed downward, but the increase in excitability by an ordinate directed upwards. The electrodes conveying the current to the nerve are represented by A the positive, and B the negative pole. The relative extent of the alterations of the excitability, as revealed by the energy of the muscle contraction following the application of a uniform stimulus, is shown by the curves, the size and extent of which represent the changes produced by a weak, medium and strong current. The curve also shows that with a weak current (a b c) the excitability in the anodal (positive) zone is increased, and that the neutral point d lies close to the side of the positive pole. From this point the changes in excitability gradually increase and reach their maximum in the neighborhood of the electrodes, from which both phases gradually decline. The position of the neutral point also indicates that by far the larger portion of the intra-polar region is in a condition of increased excitability or catelectrotonus. The curve d e f, similar in its form to the preceding, represents the alterations in the excitability produced by a current of medium strength; in direct proportion with the increase of current—strength, there is an increase in the amount of anelectrotonus and catelectrotonus and the distance to which they spread themselves into the extra-polar regions. The indifferent point has advanced toward the center of the intra-polar regions, indicating



that this portion of the nerve is almost equally occupied by the opposite states of excitability. The curve g h i represents still further the changes following the employment of a strong current.'' These changes in excitability are not dependent upon or related to the special nature of the electrical stimulus, for they exhibit themselves upon the application of all forms of stimuli, whether mechanical, chemical or thermal. The degree of electrotonus is in direct proportion to the strength of the constant current, even to the point of destruction of continuity of the nerves. This is a very important fact.

The foregoing laws pertain to motor nerves. Nothing analogous has yet been observed in secretory nerves, but Donders confirmed it in his experiments upon the inhibitory fibers of the vagous. Does an analogous condition exist in sensory nerves?

These preceding laws, as also the laws of contraction produced by an electrical stimulus, have been established on the isolated nerves of frogs under abnormal conditions. Can they be verified on the living human body? Why not? Because of the nerves being surrounded by tissue of different degrees of resistance. This will be the key to the answer of one of these theories.

Suppose the positive pole be placed in a tooth and the negative over the gasserian ganglion, and suppose that the sensory impulse is inhibited, just as the motor is. Will the current travel on the nerve or on the surrounding tissue? To determine this I chloroformed a dog, and with expert assistance dissected out the inferior dental nerve from near the base of the skull to the inferior dental foramen and insulated. The inferior cuspid on the same side was excised and insulated and an electrode placed in the pulp tissue. With very great care the resistance through the path (pulp and nerve) was determined and found to be 23,630 ohms. The resistance through the path (the pulp to a point equi-distant away on the muscle), with the same electrodes, was determined and found to be 18,570 ohms, 5,060 ohms less than that of the nerve. This means simply that if the gasserian ganglion were right on the surface and the negative pole applied to it, the amount of current passing through each, the nerve and muscle, would be inversely in proportion to their resistance. But the nerve does not come to the surface, hence the current to pass through the nerve must travel along on it to a point opposite the negative electrode, and then pass out through the tissue to the surface, which the advocates of this theory claim it does. But an electric current always seeks the path of least resistance, so to fulfill the requirements of this theory the resistance through the nerve would have to be infinitely lower than the resistance of the surrounding tissue. A point of interest here is that the cross-section resistance of a nerve is still five times greater than its longitudinal resistance. The facts are that the current would diffuse throughout the entire tissue of that side of the face, and the amount of current flowing through the nerve at any point in cross-section would be less than that flowing through the same cross-sectional area of the tissue at any point around it, within a wide area. Hence the theory of *short-circuiting* a nerve is inconsistent and its accomplishment in dental therapeutics clearly impossible. I have demonstrated this on the inferior maxillary of a sheep and on the sciatic nerve of a frog. This is a very important consideration, as it determines to a great extent the possibility of realization of the fundamentals of both the inhibition and the polarization theories. It was because of this fact that Erb in 1867 failed to verify on the human body the laws established by Pfluger in 1859. He found as a constant result of many experiments that there occurred a diminution of excitability in the extra-polar catelectrotonic region and an increase of the extra-polar anelectrotonic region. Helmholtz subsequently demonstrated that the cause of this deviation from Pfluger's law is the position of the nerve in the uninjured body. He says, "Since the nerve is in a position surrounded by a well conducting medium, even better than itself, the current density in the nerve must rapidly decrease with distance from the electrode. Whilst, of course, under the polarizing electrode the current density in the nerve is the greatest, this density, on account of the moist conductors surrounding the nerve, so rapidly decreases that it becomes almost *nil* for the nerve at even a short distance from the electrodes. At a small distance from the positive pole, therefore, the density is so slight that it may be assumed without error that the current now leaves the nerve, or in other words, the cathode (so far as the nerve is concerned) is to be found at this point. It is to be expected, therefore, that the effects of the opposite pole would be observed at only a short distance from the applied pole."

Now as regards the application of a constant current to the dental organs. Where will the current leave the dental nerve if the positive pole be upon the exposed pulp and the negative on the cheek? Not to discuss the anatomical structure of the pulp—nearly two-thirds of a pulp consists of blood vessels and their contents; much less than one-third nerve fiber, and the balance connective tissue, etc. The blood has a greater conductivity than the nerve tissue for the same cross sectional area, consequently most of the current will travel through the surrounding tissue and not through the nerve tissue. The size of the apical foramen and the resistance through the walls of the pulp-chamber are of some importance in this connection. In the case considered above but a very small per cent of the entire current flowing would travel for any distance on the nerve fibers, since it would go direct to the less resistant tissue. Suppose the current applied just as in the last case, except that the pulp is not exposed and the current must pass through the dentinal tubes. Here it seems to me would be an ideal condition for the demonstration of either the polarization or the purely inhibitory theory. We would expect that since these tubes contain chiefly the projected fibers of the odontoblastic or spindle-shaped neuclated cells surrounding the pulp, which are supposed to be the periphery endings of the dentinal nerves, the current would of necessity have to pass through this structure to the pulp before it could disseminate to the other structures. Of course the lime salts of the dentin are a non-conductor. If any effect is produced by applying the current in this manner through the drill it must be on this structure in the tubes, for it would disseminate immediately on arriving at the pulp tissue. These cell projections probably fill completely the space of these tubuli.

Will the current applied under these conditions produce anesthesia of the part to any considerable extent? I answer guardedly and after giving the question a very thorough investigation, No. From a physiological standpoint it would not be possible, since we are dealing with a sensory nerve, the most sensitive one in the body, whose function is to produce the sense of pain with the very slightest irritation. If the sensory nerve did not respond in the form of pain to the passage of the current, we would expect even then the amount of current necessary to produce this condition, judging from motor nerves, would be many million amperes.

But you say the impulse which carries the sensation of pain in the sensory nerve is related to the internal nerve-current of the nerve, discovered by Du Bois-Reynold, and why could not this impulse be interposed by an artificial current, thus not permitting the pain impulse to pass? There are two answers: First. This nerve-current always travels from center to periphery in motor nerves, and from periphery to center in sensory nerves, always in the direction of the impulse, hence it would be in the same direction as the polarizing current, which really increases this nerve-current when in the same direction. We should then expect on this theory an increase of sensitiveness. Again, the normal sensory impulse has no connection with this nerve-current, and furthermore, the origin of this nerve-current would answer this question. I think it is inconsistent to expect to be able to pass enough current through the sensory nerve to produce that condition of anelectrotonus, since the pain limit will not permit of scarcely the thousandth part of so great a quantity of current to be passed as would be necessary to produce that same condition in a motor nerve, provided the sensory nerve were capable of an analogous reaction. For the clinical answer to this question I have tried in vain to produce this condition, using every variety of conditions in the tooth, and all combinations of potential and resistance possible in instruments on the plan of this theory. It is very simple and would be ideal if possible. Any good cataphoric apparatus will produce every possible combination of any of these instruments in use at the present time.

I have verified repeatedly that the resistance through a tooth, accordingly as the cavity is wet or dry, will vary from thousands to hundreds of thousands of ohms. I have measured cavities in dentin after dehydrating and found them to vary all the way from 20,000 to 1,000,000 ohms, and in different parts of the same cavity almost that amount of variation over the surface of the dentin alone, while through the enamel, of course, those figures will be multiplied by thousands.

Two things must be evident to everyone at a glance, viz., that in delivering the current to a tooth, from the bur as the positive electrode, it is impossible to have a uniform amount of current flowing as the bur is moved to different parts of cavity, owing to the variableness of resistance of the different parts of cavity; and that with so very high a resistance it would be impossible to have more than an extremely weak current flowing unless the potential were very many times that used.

With my instruments I can measure with precision and express in amperes any amount of current from a one-hundred-and-twenty-five millionth of an ampere to one-twentieth of an ampere. I measured the actual amount of current flowing in amperes in the use of two of these instruments, as used by their exponents, and found it to vary from six millionths of an ampere to one-twelfth millionth with one, and from one six millionth to one sixty millionth of an ampere with the other instrument. In view of the fact that this condition of anelectrotonus is in direct proportion to the amount of current flowing, I have passed as high as two milliamperes of current through a healthy live pulp and tried to work on it at the same time, but could not produce this condition of anelectrotonus. I have even let it flow for fifteen minutes and not been able to touch the pulp even slightly without pain. We saw from the law established by Pfluger that this condition was in direct proportion to the amount of current flowing, hence how impossible for the millionth part of an ampere to produce this condition if two thousand times as much did not.

Another feature here appears, making the realization of the anelectrotonic condition of the dental nerves impossible, which is the law of stimulation of an electric current. This law holds that it is the sudden variations of current strength that excite muscular contraction in a motor nerve, or in a sensory nerve produce its impulse, pain. Hence when the current is delivered to the tissue from a revolving bur, every blade brings with it an interruption of the current strength, and if the current strength were great enough to produce anelectrotonus it would cause excruciating pain.

What are the laws governing osmosis? This theory provides that when we apply an electric current to tissues, with an interposing layer of some medicament under the positive pole, that medicament itself will be carried into the tissue by means of a physical force possessed by the current. *What is osmosis?* It is the diffusion of a dissolved substance in a solvent to equalize the concentration. If a layer of pure water be placed over a solution of sugar the system immediately commences to suffer a change. The particles of sugar rush from places of a higher to places of a lower concentration. This diffusion process, as the phenomenon is called, does not cease till the concentration has become the same in all parts of the solution. Let us imagine the sugar to be separated from the pure water by a semi-permeable membrane, such as will allow of the passage of the water, but not of the sugar. Of course the sugar will exert a pressure, and since it cannot go to the water it will produce a hydrostatic force against the partition, moving it upward, if the apparatus be so arranged that it can, or if the partition cannot move, and the chamber in which the sugar is confined be arranged with a capillary tube, the water will pass into the sugar solution through the membrane, increasing the volume of the confined solution, causing it to rise in the tube to a height equal in weight to the osmotic pressure of the sugar. This condition exists in any possible solution and is influenced by many conditions. The osmotic pressure of cane-sugar in water has been demonstrated by Pfeffer, using cupric ferro-cyanid as the semi-permeable membrane. He has shown that a saturated solution exerts a pressure of about four atmospheres, which would at the ocean level be about sixty pounds to the square inch. The osmotic pressure is in definite proportion to the concentration and temperature. This condition is perfectly analogous to that of a gas confined within enclosing walls. It exerts a definite pressure which is influenced both by temperature and density. The molecules of the gas tend to fill all the space, each endeavoring to get as far from every other molecule as possible. Just the same condition exists among the molecules of the dissolved substance; every molecule endeavors to get far away from every other molecule, thus filling the greatest possible space; and they will continue to do so just so long as more pure solvent is provided. It has long been noticed that a coincidence existed between the osmotic pressure of a substance and the gas pressure of the same substance. It is known that "the osmotic pressure is exactly the same as the gas pressure which would be observed if the solvent were removed and the dissolved substance were left, filling the same space in the gaseous state at the same temperature." There is a constant relation between the osmotic pressure, the freezing point, and the vapor tension of substances of the same molecular specie.

From the few laws governing osmosis just quoted we can make some valuable deductions as to the role this force plays in cataphoresis. Since the nature of the solvent has nothing to do with the osmotic pressure, it at once becomes obvious that—First. It does not matter what solvent we use for our cocain (provided it is the force of osmosis that accomplishes the work). Second. Since the osmotic pressure is in direct proportion to the concentration, the solution should be as nearly saturated as possible. Third. Since the osmotic pressure is increased to a definite extent by each degree in increase of heat, the solution should be kept as hot as possible.

These hold good for practical application, if the force we are dependent upon is osmosis. Will osmosis carry cocain into dentin to any considerable extent? To answer this I have sealed a saturated solution of cocain in cavities for two days, and again for two months, without producing anesthesia except on the very surface of the cavity. I have also applied it for some time on an exposed pulp and could not cut very far into it. Sulphate of strychnin and bichlorid of mercury applied on cotton to the chests of frogs produced no physiological effect, while with a current death was produced in a few minutes. This answers the question whether osmosis alone can produce this condition. Now for the theoretical suggestions. We know that if a saturated solution of cocain be placed in a cavity there will be a difference of concentration between the cavity and dentin and the cavity and pulp. We know also that the velocity of migration of the dissolved salt will depend on two things: The osmotic pressure or "head," and on the resistance. We have all observed how slowly a very fine precipitate settles. This is the resistance of the solution. Just so the resistance of any solvent to any dissolved substance can be determined from the osmotic pressure and velocity. Now as a matter of fact all cell tissue and porous partitions offer great resistance to osmosis, and many cells have the power of permitting some substance to pass while excluding others. This is the foundation of plant-life physiology. It is for this reason that some bacteria are so difficult of destruction. In the dentin we have both of these conditions, and it would be expected that a very great barrier would exist here to osmosis of the cocain. So far as I know, no thoroughly scientific study has been made of dentin in this connection. We are forced to conclude that osmotic pressure is not the force on which depends the transmission of cocain through dentin into the pulp. This brings us to a consideration of the last question, viz., What are the laws of electrolysis?

What is electrolysis? "It is the change that is effected by the passage of an electric current in so far as the electricity exhibits itself as such." How is electricity conducted? As expressed by Nernst and translated by Palmer, "The conveyance of electricity in conducting substances may happen in two ways, viz, with or without the associated transportation of matter. The latter happens in the case of metallic conductors (first class); the former in electrolytic conductors (second class); hence these are called conductors of the (first) and (second) classes respectively." The nature of conduction in the first class (metallic) is unknown, but the nature of conduction in the second class is perfectly understood. From the above author I quote that, "The process of the conduction of a current, as a result of electric forces in conductors of the second class, consists in the displacement of free ions. By free ions we mean those which are not united with each other to form electrically neutral molecules; the positive ions migrate in a direction from anode to cathode, the negative ions in the opposite direction."

A solution conducts electricity better the more numerous the ions and the smaller the friction which they encounter in their migration. This conception may be applied unchanged to every substance which conducts electrically—whether gaseous, liquid or solid; whether simple or a mixture. In so much as it is impossible for a weighable quantity of a substance to consist solely of positive or negative ions—because this would signify the accumulation of such immense quantities of electricity that the substance would at once be dissipated in consequence of the repulsion— only *compound substances* (but no elements) have the property of electrolytic conductivity. Moreover, the molecules of the conducting substances must be dissociated in order that there may be free ions present; *and the free ions are divided into two classes which are sharply contrasted*, according as they are positively or negatively charged. The electrolytic charges of the ions are equally great and equivalent whether they occur in solution or in substances having a simple composition. This would be anticipated, because the fundamental laws of Faraday hold good both for water solution and also for fused salts. It is very remarkable that *we do not know of any electrolyte which, in the pure state and at ordinary temperatures, has the power of (electrolytic) conductivity to any marked extent.* Thus, liquid hydrochloric acid or pure water cannot conduct electricity noticeably. But when they are mixed they become conductors. The reason for this certainly is not that the ions in the pure liquid experience too great a resistance to their movement, but rather that the liquid electrolytes in the pure state are dissociated only to the very slightest extent. So, in the passage of a current through any liquid except a metal, the current can pass only by dissociating some of the molecules, called the ionization of the medium, and these ions which are equal in quantity migrate in their respective directions. The measure of the ions traveling in either direction is the exact measure of the ions traveling in the other direction and the measure of the current flowing.

This is expressed by Nernst as follows—"When the galvanic current passes through conductors of the second class, viz., electrolytes, then, in addition to liberation of the heat, there occurs a transportation of matter (migration of the ions); and also on the limiting surfaces between the conductors of the first and second classes there occur peculiar chemical processes, which latter consist primarily in the solution of the electrodes or in the separation of the ions from the electrolytes, but they are usually complicated by secondary reactions between the electrolyte and the separated products." This reaction and the phenomena attending it has, by a new reaction of this ion in a different place, forming again an insoluble precipitate, been taken by some as a proof of the movement of solid substance through the solution.

The quantity of the ion separated in unit of time upon the electrode is proportional to the intensity (strength) of the current; and the same quantity of electricity will in the most differing electrolytes electrolyse chemically equivalent quantities of ions. In those cases where the chemical value of the ions is capable of changing, of course the meaning of *chemical equivalence* changes; thus the same current which separates 200 grams of mercury from a solution of $Hg\ NO_3$ will separate 100 grams from a solution of $Hg\ Cn_2$. The above author says, "It is only in the rarest cases that the ions themselves are formed as the products of electrolysis, i. e., products which have the same composition as the ions as they are primarily separated, which differ from the ions only by having given up their electric charges. Thus the hydrogen ions appear in the form of H_2; the ions of certain metals in the form of metals; and under suitable conditions the ions of the haloids (acidiferous elements) in the form of metaloids. But much more frequently the ions either act upon each other on being separated, as in the decomposition of the acetic acid ion according to the equation, $2CH_3\ COO = C_2\ H_6 + 2\ CO_2$, producing ethene and carbon dioxid; or the ions may react upon the water, as when separated sodium gives off secondary hydrogen; or finally, the ions may react *upon the metal of the electrode*, as when separated chlorin forms the respective chlorid."

The (freshly separated) ions, which have been deprived of their charges by aid of the passage of powerful electric energy, are illustrations of substances containing a large quantity of free energy, that is, illustrations of great affinity. The (freshly separated) ions are able to perform reactions of which they are quite incapable in the ordinary state; thus freshly separated hydrogen, unlike ordinary hydrogen, can reduce nitric acid to the so-called "nascent state." It is especially worthy of our notice here that electrolytic dissociation, as compared with ordinary dissociation, is influenced but slightly by temperature. In fact it sometimes happens that with rising temperature it diminishes. or it may slightly increase, which is in strong contrast with ordinary dissociation, which always rapidly increases with rise of temperature.

Let us now apply some of these laws of electrolysis to the particular process in which we are interested. Suppose the positive pole to be applied to the dentin of a tooth and the negative to the cheek. An interposing layer of medicament, say cocain in water solution, is between the metallic positive electrode and the dentin. Now the only way electricity can get from the metallic positive electrode to the metallic negative electrode is by the dissociation of some of the molecules in every substance of the second class through which it passes. In every part of the course through the cocain solution, the dentin, the pulp, the connective tissue, the blood vessels, the muscle tissue, and sponge on the negative electrode there will be a cleavage of some of the molecules of the various chemical compositions into a positive and a negative ion. These ions, with equal force and chemical equivalence, start on their respective journeys toward their opposite poles. They meet with friction, which varies for different ions, and since they have the same forces behind pushing them, their velocities will vary with their resistance. If in their course they meet a new ion or an element or compound for which they have a greater affinity than the force which separated them, they will unite with it until they are again called into service. Unless an ion found such an affinity it would keep on going until it got to the metal plate of negative electrode, and if it could unite with it would do so. If not, would be deposited upon it or be liberated in the form of gas.

Now the question we have heard raised so often, "Is the current we use strong enough to produce any electrolysis?" must be settled, for if we have no electrolysis we cannot have any current flowing, and the measure of the current is the measure of the electrolysis, and vice versa. In the case above the hydrochlorate of cocain would be broken up. The positively charged ions passing into the tissue toward the negative pole will doubtless meet negatively charged ions for which they may have great affinity coming towards the positive pole, and at once in the tissue there will be formed a new product. Now it is a fact that only a small per cent of the molecules will ionize or dissociate, hence we see why there has been practically no difference in the effect we observed from using a saturated solution of cocain or a one-per-cent solution.

I have observed the following results by applying the cocain solution as stated above: *First.* In nearly 1,500 cases, of which I have kept a record, the per cent of perfectly successful operations has been between 95 and 100, and of late, with the increase of experience, all cases have been successful on the second application, if not on the first. Of these fully 100 were cases in which the pulp was entirely removed at the time, and in about 200 more the pulp was drilled into and partly removed, and a devitalizing agent used to complete the destruction. *Second.* In almost all cases of single-rooted teeth the pulp was entirely removed at the time. *Third.* No sensation of pain was felt from the devitalizing agent applied after using cataphoresis. *Fourth.* Not a single case as yet of a dead pulp from the use of cataphoresis. *Fifth.* No difference has been noted in the time required for varying concentrations of cocain or any other agent. *Sixth.* The average time required for all cases was about thirteen minutes. *Seventh.* The amount of current tolerable is determined by the effect of the cocain on the pulp tissue, and not in the dentin, in a case of unexposed healthy pulp. *Eighth.* The resistance through the wet dentin varies all the way from a few thousand to five hundred thousand ohms. *Ninth.* The amount of current tolerable has been found to vary from one two-hundred thousandth to two-thousandths of an ampere, the average being less than two ten-thousandths at the beginning of the operation and four ten-thousandths at the finish. Of course, where pulps were devitalized a very much stronger current was used for the finish, though seldom more than that amount was used where the continued life of a pulp was expected. *Tenth.* There are constant symptoms that will give any indication of the amount of current flowing. Each case has a different pain limit. Hence the absolute necessity of using a milliamperemeter. *Eleventh.* No effect has ever been noted in the tissues beyond the tooth, except where a very strong current was used, then slight periostitis.

What deductions can we make from these results? We know that when a solution of cocain is applied to the dentin of the tooth, under the positive pole, with a negative elsewhere, we do get anesthesia, not only of the dentin, but of the pulp tissue, if applied long enough. Will the current alone produce this condition? No. Then it is not the current that does the work. Will the medicine alone produce this condition? No. Then it is not a simple osmosis. Does the current so applied produce any change in the cocain solution? Yes, it cannot pass through it except by changing it.

Is there a transmission of matter in this solution under these conditions by simple osmosis? Probably very slight. Is there a considerable transmission of matter at all? Yes, by the migration of the ions. Do these ions produce currents which carry the unchanged medicine with them? Theoretically yes, but practically very slight. Are these currents produced in both directions? Yes. Can an osmosis be produced from a negative to a positive pole? Yes, in some solutions. (An analogous phenomenon is observed when a globule of mercury is placed between two electrodes in water, the globule goes to the positive pole.)

According to the older theories there was supposed to be a physical force exerted in some manner by the electric current applied in this manner, and this idea has its advocates yet. There is a newer theory, however, which is made by its introducer, Nernst, of Gottingen, Germany, to explain all the phenomena. He thinks that there is no transmission of matter except the ions themselves. Now to follow this argument in this connection, if it is the force of osmosis on which we are dependent, what will be the effect of new molecules of hydrochlorate of cocain being formed in the pulp tissue by electrolysis on the osmosis from without? Of course, if such be formed, it would diminish the difference of concentration within and without the pulp chamber, and by doing so would lessen the force of osmotic pressure, which is in direct proportion to the difference of concentration at various points. In this case it would not seem that the current was helping the process. It is certain that we are not dependent on a difference of concentration for the development of the force that carries the cocain through the tissue. Do we know that a medicament can actually be forced into the pulp at all? Yes, in many ways. I have put sulphate of morphin with the cocain, and after extracting the pulp on a broach been able to detect the morphin by the nitric acid test under the microscope. I have killed a frog in twenty minutes with sulphate of strychnin with the current, when neither the current alone nor the medicine alone, left for a considerable time, produced any noticeable effect. I do not believe the medicine was in any case carried in as the original chemical species, but was charged by electrolysis. And further, with the conditions under which we use cataphoresis, I believe the forces upon which we are dependent are the dissociation of the molecules and the increased energy of these dissociated products. These ions by their migration and by the new chemical species they form are capable of producing perfectly analogous phenomena under different circumstances, but under analogous conditions. A good example is this experiment I have here. In these three test tubes we have respectively a solution of Na So 4, So 4, and water; the water is spring water and the sulfuric acid solution about 1% concentration. The positive pole of the electric current is attached to the Na So 4 solution and the negative to the water, and the tubes connected with pieces of asbestos. Now if the osmosis of the H_2 So 4 is going to be accelerated by the electric current we shall soon see the litmus paper in the water turn red. If, on the other hand, the process of electrolysis is stronger, it will dissociate some of the Na So 4 and the Na ion will travel through the H_2 So 4, probably with accompanying reaction, and appear at the negative pole in the water solution, producing an alkalin solution, which is the action we get. Of course the sodium acts on the water, liberating hydrogen.

The final goal is of course to diminish the time. I do not believe this will be done by seeking directly for a substance that has a high osmotic pressure, but rather in seeking for a reaction that will produce the most active ion. It is true, however, that substances which have a high osmotic pressure have good conductivity. Since the amount of current we can use is limited by the pain limit of the tissue, and the amount of electrolysis is a constant expression of the strength of current, of course the amount of chemical energy we can liberate is fixed, and we cannot hope to change this unless we can change some of the laws of either *physiology*, *electrolysis* or *chemistry*. We have left these unfixed conditions to modify, viz, to select the ions with greatest migration velocity and which themselves or the compounds they will form will produce greater physiological effect upon the tissue for the same unit of concentration in the tissue. There is no reason why great advancement should not be expected in this direction, and it is my opinion that when it does come, it must come along this line.

Digests.

RELATION OF DENTAL OPERATIONS TO PREGNANCY. By Frank Elliott, M.D., Kansas City, Mo. It is with genuine pleasure to the American women that the old saw, "A tooth for every child," is becoming an obsolete phrase. We now see the well-developed child-bearing woman of forty years of age with a set of serviceable teeth, a good digestion, and a well-balanced nervous system. We are largely indebted to the careful and painstaking dentists for this changed condition. It is only within the last decade that dental work was allowed on the pregnant woman, not from any known injury to her, but simple because she was hedged about by superstition and ignorance. I am speaking now of the great masses of women, not of the favored few who live in the large cities and who have the advantages of a more thorough intercourse with the world. It was formerly supposed that to taste of her own blood would cause a woman to abort; an extraction of a tooth was, therefore, to be avoided.

Abnormal conditions of the mouth and teeth during pregnancy may occasion considerable distress and inconvenience. The gums may become soft, and a condition known as "white caries" is often seen in the teeth; in other cases the gums are reddish in color and are retracted, exuding a thin fluid or pus from around the neck of the tooth. This condition does not imply neglect of cleanliness, but results from the altered secretions of the oral and buccal cavities. The saliva early in the day is of an acid reaction, and the more profound and long-continued the nausea, the more acid becomes the saliva and the contents of the stomach. These conditions have a potent influence upon the development of caries of the teeth. Softening of the dentin of the upper bicuspid and molar is sometimes observed, apparently because they are the teeth against which fluid is most forcibly ejected in the emesis of pregnancy.

Affections of the nerves of the face and teeth are often referred to pathological conditions in the mucous membrane of the stomach, and are sometimes purely reflex from an ulcerated cervix uteri. These conditions must be overcome by the appropriate remedies, and here is where the scientific dentist comes in to take most of the responsibility of the preservation of the teeth of these patients. It is the duty of every physician to send a pregnant patient to her dentist for examination, and it is perfectly right and proper for a dentist to ask to be allowed to inspect the teeth of his regular clientage; your patients think more of both physician and dentist for these little courtesies extended to them. On account of its easy removal and non-irritating character, I would advise plastic filling. If the cavity is too large, or if from any cause the tooth cannot be saved, there is no valid reason why it should not be extracted. It is well to remember that the mother has no power to affect her offspring except physiologically. She does not have the power to deform the child at will, or change its hair from red to black, but she does have the power to affect its nervous system; what could be more irritating during the months of gestation than to have one or more teeth that are decaying or ulcerating? I do not know of an operation within the sphere of dentistry that could not be undertaken with perfect safety. Of course, there are some responsibilities to be assumed; an ulcerated tooth has been known to produce an abortion; after a night of suffering, when the pains become almost unbearable, the patient decides to have the tooth removed. The uterus may have become dilated or dilatable, and an abortion well under way before the tooth was extracted, but the cause of the mishap is attributed to the dental work.

There is dilation of the heart cavities and hypertrophy of the left ventricle in the pregnant woman, and for this reason it is dangerous to give opium in any form to such patients. A dentist is not justifiable in performing an operation on a patient to whom morphin has been exhibited for the relief of pain, although it may have been given by the advice of the patient's physician There are cases on record where this drug, under such circumstances, has produced death, and in the controversy or law-suit which follows the physician always has the advantage of the dentist.

Local anesthetics which contain more than one per cent of muriate of cocain are dangerous expedients on account of their heart-depressant qualities. Dilatation of the sphincters of the body as a mode of resuscitation is dangerous on account of its reflex character. Chloroform or ether by the ordinary mode of inhalation, with the patient in a prone position, is the best form of anesthetic known at the present day. A dentist is justifiable in refusing to extract teeth from a patient with chorea or syphilis; the tendency to abort is paramount in such cases, and any exciting cause may precipitate the trouble; of course it may be performed under the advice of a physician, and after a full explanation of its probable results. Dentists who follow these points should be protected by testimony in a court of law against the charges of malpractice.—*Medical Arena.*

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PYORRHEA ALVEOLARIS. By J. W. Wassall, M.D., D.D.S., Chicago. Read at Illinois State Dental Society, May, 1897. The statement was made at a recent meeting of the Chicago Dental Society that more human teeth were lost from this malady than from dental caries. The idea to me was a startling one, but a little reflection convinced me of its reasonableness. It might be more true to the facts to say that caries was the arch enemy of childhood and youth, while pyorrhea alveolaris was the destroyer after thirty.

The disease of pyorrhea alveolaris may be discussed by dividing into the following six general headings: 1. Definition. 2. Symptomatology. 3. Pathology. 4. Etiology. 5. Treatment. 6. Prophylaxis.

First, definition. The dictionaries of medical and dental science give very inadequate definitions. Black, American System of Dentistry, Volume 1, defines phagedenic pericementitis as a specific, infectious inflammation having its beginnings in the gingivæ, and accompanied with destruction of the peridental membranes and alveolar walls. Dr. Black's paper at Quincy in 1882 was the first real attempt at a scientific description of this disorder before this society. His appellation of the disease given at that time seems more appropriate philologically and scientifically, but common usage has given the term pyorrhea alveolaris its stamp of greater authority.

Second, symptomatology. There are two classes of symptoms—subjective, or those experienced by the patient, and objective, or those obvious to the operator. The most prominent subjective symptom is pain. It may be localized in the alveolar tissue or be reflex in remoter parts of the cranium, face or neck. It will vary in degree from a trifling uneasiness to intense suffering. The tooth, the socket of which is affected, may be elongated or tender to percussion. The patient is frequently but not always conscious of a discharge from the alveolus, having a fetid odor or taste. The patient will usually give a history of periods of comparative comfort followed by marked exacerbation of all the painful symptoms, but each attack leaving the tooth a trifle more loosened. The objective symptoms during an acute attack of pyorrhea alveolaris will be the characteristic signs of inflammation—heat, redness, pain and swelling. If the disease is of long standing a deficiency of alveolar and of gingival tissue. The existence of so-called "pockets" about the gingival line is pathognomonic and the infallible diagnostic sign of the disorder. The extent and depth of pockets varies from a slight solution of continuity in the peridental tissue to a complete severing of the root's connection from its socket. Pressure on the gum over a pocket will produce a discharge of pus. The use of the sound or probe will reveal to the educated digit the presence of a deposit of calculus upon the cementum. These symptoms are not always constant, but are present in varying degrees according as a case is in an active or passive stage.

Third, pathology. I desire to call attention to a condition described by many writers which has not received a proper interpretation. I refer to the occasional presence of a deposit of calculus on the root having no external communication with a pocket or gingival margin. The statement is sometimes made that such a condition occurs and that it gives rise to an acute attack with all the usual symptoms except the absence of a connecting pocket. It seems highly improbable from what is known of the formation of pockets in pyorrhea alveolaris that this condition could arise *de novo* as described. Is it not more reasonable to attribute the condition to nature's attempt to close up a pocket after the subsidence of an acute attack by which the deep end of the pocket—the bottom of the pocket so to speak—is left as a cul-de-sac containing its scale of calculus on the roots, together with the several varieties of pathogenic bacteria which will ultimately give rise to further outbreaks of the acute attacks? A condition of the gravest consideration under the head of pathology is the wasting of the alveolar process. This is due to destruction of the peridental membrane which undoubtedly has occurred wherever pockets have formed. The peridental membrane is the alveolo-dental periosteum, being the periosteum of the alveolar wall next to the root as well as the periosteum of the root. Its disappearance would deprive the process at such points of nutrition and would sufficiently account for the wasting of the bony structure.

Fourth, etiology. The cause of pyorrhea alveolaris is still involved in mystery, and thus far nothing conclusive has been established. There seem to be advocated, first, that the cause of the disease is purely local; second, that it is constitutional; and third, that it is of local and constitutional origin combined. The argument so often advanced that the disease must be purely local, because local treatment will result in its disappearance, would at first glance seem to be conclusive. But a closer examination of this claim shows its fallacy. For by the same reasoning eczema, the local manifestations of which are removed by topical treatment, could be called a local affection, when its constitutional origin is a well-known fact.

A more satisfactory cause to my mind is proposed by Drs. Peirce and Kirk, viz., the uric acid theory, but the value of their claims is still speculative. While I do not deny that their claims may be correct, I am not prepared to accept their proposition that the deposits of pyorrhea alveolaris are equivalent or analogous to the calcareous deposits of the uric acid diathesis. Dr. Black has demonstrated by his analyses that uric acid may be present in all deposits upon the teeth, salivary or serumal, irrespective of the fact of the presence of pyorrhea alveolaris. If the serumal deposits of pyorrhea alveolaris were identical with the calcareous deposits in the joints of gouty or rheumatic subjects, why is it that the deposits on the roots of teeth never occur as loose nodules in the peridental membrane? I wish to assert that I am unconvinced that pyorrhea deposits originate *de novo* unless situated in pockets. The chemical analysis of any calculus taken from an individual of the uric acid diathesis—and the uric acid diathesis is very prevalent—would naturally reveal the presence of uric acid. Would you infer that stone in the bladder and its accompanying irritation were due to gout because analysis yielded uric acid crystals? I give these few objections to the uric acid theory, not because I disbelieve in it entirely, but to show that the ground upon which its advocates stand is not yet assured.

The causative agency of the calculary deposits in pyorrhea has always been a matter of doubt. While it is almost unquestioned that a pocket precedes the formation of a deposit, yet it is plain to every observer that the presence of serumal calculus aggravates all the symptoms and accelerates the progress of the disease. Salivary calculus is important as a predisposing cause of pyorrhea alveolaris, in that it establishes a lesion of the gingiva, a condition favorable to the development of the disease.

I wish to suggest a constitutional disorder which seems in my judgment to bear an important relation to this affection. It is eczema.

All observers seem to agree that the scrofulous tendency or dyscrasia is very favorable to the development of pyorrhea alveolaris. Scrofulous persons are invariable subjects to impairment of the integument or of the tegumentary appendages. In one family it will be early failing of the hair bulbs; in another dryness of the cuticle. All such are tegumentary degenerates, and I see very few cases of pyorrhea alveolaris in which I cannot find some indication of eczema.

The infectious character of pyorrhea alveolaris has been noticed by many observers. Dr. Black, in the article before referred to, states it as his belief that the bacteria which are found to abound in the discharge stand in an important causative relation to the disorder. So far as I can learn, no one species has been isolated which will give rise to the disease by inoculating the peridental membranes of the lower animals. There is here open a fruitful field for study and investigation. The disease is in all probability caused by a germ or its toxines, and it is only a question of time when the particular species will be demonstrated.

Fifth, treatment. The constitutional origin of pyorrhea alveolaris is so much involved in mystery at this time that there is no basis for systemic treatment. So far as I am able to learn, there is also not even an empirical method of systemic treatment of any special value. We are therefore driven to the other alternative and forced to rely on local treatment until such time as further investigation shall have revealed the truth to us. For the same reason local treatment is carried on in the dark, but we know that in this direction only can we obtain any really satisfactory results.

When a case presents it should be the first duty to make a thorough examination. The gingivus of each tooth should be carefully sounded for pockets and when one is found its location, depth and width should be accurately indicated on the diagnosis chart. The treatment should consist first, of the removal of calculus; second, medication; third, the securing of rest and protection. The location and removal of calculus is often one of the most complex and trying operations the dental practitioner is called upon to perform. There is nothing I can add to what has been said upon this question. Each must put forth his best skill and ingenuity to accomplish the end sought. It is perseverance, educated digits, and concentration of mind on the cutting edge of the instrument which should be depended upon. Cocain anesthesia may be used in painful cases.

In some examinations of cementum of teeth affected with pyorrhea alveolaris, reported by Dr. George B. Clement at the World's Columbian Dental Congress, he asserts that the superficial lacunæ and canaliculi become solidified by calcific deposit. It therefore becomes a matter of much importance after removing the serumal calculus to also take away this layer of solidified cementum. Indeed, it has seemed to me that success in obtaining adhesion of the new growth of pericementum to the cementum is entirely dependent upon the ability to present a freshly exposed surface of normal cementum to the new granulations.

All operations should be accompanied with a free use of a powerful stream of warm water from a small-nozzled syringe. Medication should consist at the first visit of, first, disinfection to remove all traces of bacteria; second, of a vigorous escharotic to destroy pernicious tissue and act as an alterative and establish a healthy action, which is the proper surgical treatment for any ulcerative surface.

To secure rest cusps should be shortened with the corundum, and if there is any loosening a splint should be adjusted—metallic bands, pure silver or gold preferably, or waxed silk ligatures.

The mouth is such a favorite habitat for the myriads of pathogenic bacteria that it would be eminently desirable, if it were possible, to seal up the external openings of pyorrheal pockets. I have not as yet had any experience in such a procedure, but I believe it is feasible and some effective way should be employed.

Subsequent treatment should be made with the utmost care not to break up any reparative processes which have begun. Failures are often occasioned by careless probing or uncalled-for force in injecting medicaments at this stage. Search for deposits overlooked at the first treatment should not be made unless there is positive evidence of their presence by failure of the pockets to close. Disinfectants and stimulants at varying intervals of from one to seven days are indicated until a cure is obtained.

As every patient once afflicted with this disease is subject to a recurrence, prophylactic measures become an important consideration. Maintaining a robust general health, vigorous friction with tooth-brushes regularly applied at bedtime and on arising—having four brushes in use so that they are not water soaked when employed—and the rubbing continued for three or four minutes, to be followed with a disinfectant mouth-wash—the fluid to be retained in the mouth three minutes—are the measures from which I have observed good results. Pyorrhea subjects should have the mouth examined for pockets every three months.—*Dental Review, June, 1897.*

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PRACTICAL THINGS IN PRACTICE. As a covering and protection for slight wounds on the hands it has been recommended that an application of collodium and Peru balsam (1 : 10) gives excellent results. This will remain intact and be perfect for days; and washing the hands with soap and warm water does not disturb it in the least. It is easily prepared and yields satisfactory results.

A low fusing metal, which is also very hard, can be produced as follows: 48 parts Bismuth, 13 Cadmium, and 19 Tin. This metal is useful in crown and bridge work, and fuses at about 200 F.

A compound for modeling can be made by using marble-dust and adding to it a sufficient amount of glycerin to produce a moldable material.

In the event of pulpitis or inflammation of the pulp, cleanse the cavity by using warm water and apply a small amount of pulverized thymol over the pulp. If the pain still continues, add one drop of chloroform to the applied drug and immediate relief will be afforded.

There is yet needed a metal which will take the place of gold in the making of bases for dentures. Many have advocated aluminum, but this metal does not favor us with the desirable properties of gold. A new metal which seems to have the requisites of the royal metal, and which is less costly, has of late attracted considerable attention in Germany. It is composed of Silver 3.53; Platinum 2.40; Copper 11.71. This metal is elastic and takes a most brilliant polish. It is not acted upon by the fluids of the mouth and answers the same purpose as gold. Dentists who are interested in a substitute for gold will do well to experiment with this formula.—Trans. by Dr. B. J. Cigrand, from *Zahnaerztliches Woch., June, 1897.*

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BRIEF STUDY OF CHLOROFORM ANESTHESIA IN RELATION TO SEASONS AND CARBON DIOXID. By T. R. Evans, M.D., Charleston, W. Va. The latter portion of winter and the spring months seem to furnish the most cases of death. Then the air is heavy with moisture, while the cold chloroform is less easily vaporized and exhaled; hence the greater liability to tissue saturation unless great care is used. The chloroform may be condensed in the lungs like dew. At all times allowance must be made for the specific gravity of chloroform, and during spring for the largest amount of carbon dioxid exhaled, or there is danger of double anesthesia. Warming the chloroform at such times should be more generally resorted to.

The hypodermic of morphin is a doubtful expedient, but dietetic management and the time of day for operating are important. An empty stomach, not altogether for mechanical reasons, and the early morning hours, are the conditions of election. A drink of whisky-and-water half an hour before the operation is a salutary measure—whisky at once and for some time lessening the exhalation of carbon dioxid, while water increases the production of oxygen.

The muscularity of the subject increases the production of carbon dioxid. Hence the comparative ease and safety with which persons in the opposite condition are chloroformed. Women in labor, excreting some of their hitherto superabundance of carbon in the lochia, are proverbially safe against chloroform casualties, due allowance being made for other favoring conditions. Carbon dioxid is incompatible with the early stage of chloroforming.

The administration of milk toddy before giving chloroform is contra-indicated, as milk generates carbon dioxid.

Physiological refinements should not be tabooed in considering so important a subject.—*Medical Record, June, 1897.*

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INTERNAL CARIES. By Dr. W. H. Craig, Oakland, Cal. In examining a lady's tooth I found a minute cavity in the point of a superior cuspid. Attempting to bur out the cavity preparatory to filling, the enamel came away, separating at the neck, and leaving the dentin adhering to the root. The dentin was soft and soon became very painful. The root was also soft and was extracted. The enamel was unbroken, was white and very thin. In more than thirty years' practice this has been the only case of the kind which I have seen.—*Items of Interest, June, 1897.*

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PERICEMENTITIS FROM PHOSPHORIC ACID. By Dr. S. J. Spencer, Harriman, Tenn. I lately read somewhere that a dentist secured stronger adhesion of his oxyphosphate of zinc fillings by first painting the walls of cavity with the liquid. Thinking this a capital idea, and having a root to crown (a healthy root, which for ten years had been kept sweet and dry by a gold canal filling), I applied the method. Result: A raging pericementitis which lasted several days. The acid had penetrated the foramen before the filling material had a chance to absorb it.—*Items of Interest, June, 1897.*

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QUICKLY MADE MATRIX FOR CEMENT, AMALGAM AND GUTTA-PERCHA FILLING. By Dr. Theo. F. Chupein, Philadelphia. Cut a piece of thin German silver plate, such as is furnished for matrices, about one-eighth of an inch wide, or narrower, and about one-half inch larger than is necessary to encircle the bicuspid or molar tooth you may be about to fill. The rubber-dam having been applied, the cavity prepared, and all things ready for the insertion of the filling, pass the strip of metal around the tooth, seizing the two ends with flat-nose pliers, and draw it up close to the tooth, in the same way as you would do if you were making a band for regulating purposes. When closely fitted remove it and heat the ends, and while hot place on one end a film of hard or adhesive wax. Now replace the band on the tooth, and by heating the noses of the flat pliers, the ends are again seized. The heat of the pliers melts the hard wax which was placed on the ends of the band matrix. The matrix is held with the pliers until the wax is thoroughly cold. When removed the matrix hugs the tooth closely, and the wax is sufficiently tenacious to hold it in place until any plastic filling may be inserted.—*Dental Off. and Lab., July, 1897.*

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ORAL SURGERY. By Edmund W. Roughton, B.S., M.D. (Lond.), F.R.C.S. Eng. Operations on the Upper Air and Food Passages. Before describing these operations it will be well to recall the anatomy of the middle line of the neck. Running from the chin to the hyoid bone, there is a raphé between the genio-hyoid muscles; next in order (proceeding from above downwards) is the thyro-hyoid membrane, which is incised in *sub-hyoid pharyngotomy;* then comes the notch in the thyroid cartilage (*Pomum Adami*), which can easily be felt in adult males, but is almost indistinguishable in fat children; in *thyro-chondrotomy* the incision passes through the middle line of this cartilage; immediately below it is the crico-thyroid membrane through which the opening is made in *laryngotomy*. The cricoid cartilage comes next, opposite the fifth cervical vertebra; it is a valuable land-mark, as it can always be felt. Next comes the trachea, two or three rings of which are above the isthmus of the thyroid body, whilst six to eight rings in all are above the manubrium sterni. The isthmus of the thyroid body is in adults about half an inch broad and overlaps the third and fourth rings of the trachea, leaving a space of about a quarter of an inch between it and the cricoid; in this region the trachea is opened in *tracheotomy*. When the opening is extended upwards through the cricoid, as well as the upper rings of the trachea, the operation is called *laryngo-tracheotomy*. The trachea as it descends from the thyroid isthmus recedes from the surface. Above the thyroid isthmus the air passage is quite superficial, being covered only by skin and fascia and overlapped by the sterno-hyoid muscles; but below the isthmus the trachea is much deeper and more difficult to reach, becoming covered by the sterno-thyroid muscles, inferior thyroid plexus of veins, branches of the inferior thyroid arteries, the thyroidea ima (when present), and sometimes the left innominate vein just above the sternum.

Laryngotomy. This operation affords the easiest and most rapid way of opening the air passage. It is therefore *par excellence* the operation to be performed in an emergency, as for instance when suffocation is imminent from the impaction of a foreign body at the entrance of the larynx. Under such circumstances a knife should be plunged in immediately above the cricoid cartilage, dividing the skin and subjacent crico-thyroid membrane transversely. When the operation can be performed deliberately, a vertical incision an inch long should be made in the middle line, opposite the space between the thyroid and cricoid cartilages. The crico-thyroid membrane having been exposed is opened transversely by inserting the knife just above the upper margin of the cricoid, so as to avoid the crico-thyroid artery and to make the opening as far as possible from the vocal cords. A laryngotomy tube (compressed from above downwards so as to fit the crico-thyroid space) is then inserted and tied in with tapes. It is but seldom that this operation is required, as when a deliberate operation can be performed it is preferable to perform tracheotomy.

Tracheotomy. This may be required under the following circumstances: A. To relieve dyspnea due to: (1) Diseases causing obstruction to the passage of air through larynx or upper part of trachea, such as laryngitis, ulceration of larynx, tumors of larynx, etc. (2) Foreign bodies, scalds of larynx, etc.

B. For the removal of foreign bodies and tumors.

C. As a preliminary to operations on the mouth attended with risk of entrance of blood into larynx, e. g., removal of tongue, upper jaw, etc. Tracheotomy is preferable to laryngotomy because: (1) It does not interfere with the integrity of the larynx. After laryngotomy the voice is sometimes impaired or lost, owing to inflammation extending to the crico-thyroid or crico-arytenoid joint, or to contraction of the crico-thyroid membrane. (2) The tube is more easily managed in tracheotomy than in laryngotomy. (3) Subsequent manipulations for the removal of foreign bodies in the larynx or trachea can be more easily conducted. (4) Laryngotomy is inapplicable in children, owing to the small size of the larynx.

The operation may be performed either above or below the isthmus of the thyroid; for the anatomical reasons already stated the high operation should always be performed when possible. Chloroform should be given, especially in children, as their struggles are apt to interfere with the operator. In adults an anesthetic is not necessary as, after the first incision, no pain is felt. A small pillow should be placed behind the neck to render the larynx prominent. An incision an inch and a half to two inches long is made exactly in the middle line from the cricoid cartilage downwards; the interval between the sterno-hyoid muscles is found, and the dissection carried on between them, avoiding or, if necessary, tying any distended veins which make their appearance. The first two or three rings of the trachea and the isthmus of the thyroid will now be exposed. The latter may be drawn downwards if there is not enough room; this may be facilitated by dividing the fascia which connects the isthmus to the cricoid; if necessary the isthmus may be notched or divided in the middle line. The trachea having been clearly exposed and all arterial hemorrhage arrested, a sharp hook is thrust into it just below the cricoid; the first two or three rings are then divided with a knife, the back of the blade being directed downwards. The wound in the trachea is held open with the tracheal dilator and the outer part of the tracheotomy tube is inserted; the inner portion is passed in immediately afterwards, and the whole apparatus fixed with tapes tied round the neck.

Difficulties and Dangers of Tracheotomy. When the operator has plenty of time, good light, skilled assistance, and an adult patient with a thin neck, no difficulty will be experienced, but under the opposite conditions great trouble may result in one or more of the following ways: (1) The hyoid bone or thyroid cartilage may be mistaken for the cricoid in a fat-necked child. (2) The incision may be too short, embarrassing the later stages of the operation. (3) Hemorrhage is always a source of trouble. Arteries should be tied, veins unless large may be left, as they will cease to bleed when the trachea is opened. (4) The interval between the sterno-hyoid muscles may be missed, and the dissection carried to one side of the trachea. (5) The knife may go right through the trachea and enter the esophagus. The vertebral column has been seen at a post mortem examination scored with the knife. (6) Blood may enter the trachea. This is best avoided by tying all vessels and by thoroughly exposing the trachea before it is opened. Should blood enter the trachea, the patient should be turned over and the head lowered so that it may run out. (7) The tube may be passed between the trachea and the fascia covering it. This may be avoided by fully exposing and freely incising the trachea before attempting to insert the tube.

After-treatment. The air in the room must be kept warm and moist. The tracheotomy tube should be frequently cleansed. After a few days a rubber tube must be substituted for the metallic one, as the latter is apt to damage the trachea. The tube should be dispensed with as soon as the normal passage for air has been restored. It is usually advisable to remove the tube for a few hours during the day before dispensing with it entirely. When a tube has been worn for a long time difficulty may be experienced in doing without it, owing to adhesion of the vocal cords, granulations in the trachea, or paralysis of laryngeal muscles.

Laryngo-Tracheotomy. This operation differs from tracheotomy in that the incision is prolonged upwards through the cricoid cartilage. It is sometimes necessary in children when the space above the thyroid isthmus is not large enough.

Thyro-Chondrotomy.—This operation (often called *Thyrotomy*) may be required for the removal of a laryngeal tumor or foreign body. An incision is made in the middle line from the hyoid bone to the cricoid cartilage. The thyroid cartilage is then divided accurately in the middle line, great care being taken to avoid injuring the vocal chords. After removal of the growth or foreign body the lateral halves of the cartilage are accurately sutured together.

Sub-Hyoid Pharyngotomy.—In this operation the pharynx is opened by incising the thyro-hyoid membrane. It is very seldom performed.—*Brit. Jour. Dent. Sc., July, 1897.*

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FAINTING AND TOOTH-EXTRACTION. By William Rushton, L.D.S., Eng. The following remarks are suggested by a question recently asked of me: "Is a dentist justified in taking advantage of the unconsciousness produced by a fainting fit to extract the tooth of a patient?" At first sight it may not seem an easy question to answer. The patient is in a condition of anesthesia; why not take advantage of it and so save pain? The means taken to revive a patient are by stimulating peripheral nerves; why not employ the extraction of a tooth as a peripheral nerve stimulant, and so "Contrive a double debt to pay"? These are plausible arguments, and are brought forward by those who advocate this method.

I consider, however, that the answer ought to be a decided negative. Let us consider for a moment what a faint is. Fainting or syncope is a state of suspended animation, due to a sudden failure of the action of the heart. The cause of the unconsciousness then, is a very grave one and differs markedly from the unconsciousness produced by anesthetics. Syncope may be due to any condition which interferes with the action of the heart, whether acting (*a*) intrinsically, such as fatty degeneration, tight lacing, or chloroform poisoning; (*b*) nervous conditions, such as fear or grief; (*c*) conditions of the blood, such as hemorrhage or chronic anemia; (*d*) or from a combination of causes.

Now in answer to the first argument, "Why not take advantage of the unconsciousness?" Although the brain is asleep, the nerves are very much alive, the reflexes are not abolished, and therefore the shock to the patient when the tooth is extracted may be very acute. It may, in fact, be fatal, and in that case the questions asked at a coroner's inquest may be very unpleasant. Our first duty to our patient is to restore consciousness. With regard to the second question, as to whether the extraction would not act as a nerve stimulant, the reply is that it would. But there is such a thing as overstimulus, which means shock, and the extraction of a tooth comes under this head.

Is there any objection to administering nitrous oxid gas to a patient who has just recovered from a faint, or should the operation be postponed? According to our experts in nitrous oxid anesthesia, there is no reason why the gas should not be given as soon as the patient is resuscitated. It would perhaps be better not to undertake the extraction of a number of teeth, and it would be advisable not to induce a very deep anesthesia, but for an ordinary extraction no postponement is necessary.

What are the best means for resuscitating a fainting patient? The treatment consists in removing the cause of faintness and in restoring the action of the heart. The patient should be placed flat on the back, doors and windows should be thrown open, and the dress loosened. If the patient can swallow, a diffusible stimulant, such as sal volatile or eau de cologne, should be given, a teaspoonful in half a glass of water. Smelling salts should be applied to the nostrils, and artificial respiration should be resorted to, with nitrite of amyl held to the nose in extreme cases. Cases in which patients faint at the moment of or during extraction must be judged on their individual merits and left to the discretion of the operator.—*Brit. Jour. Dent. Sc.*, *July*, *1897*.

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BRITISH TEETH ON THE DOWN GRADE. By Chas. Fox, L.D.S. Cause 2. It is difficult to name any one cause of sufficient importance to rank alongside the fivefold increase in the use of sugar during the present century. I will therefore couple the insufficient quantity of milk in the dietary of infants and young children, and the undue proportion of starch foods. The general statement that ''bottle babies'' are on the increase, and those fed from the maternal fount decreasing, will scarcely be contradicted. Failing Nature's home supply, cow's milk, diluted and sweetened, is used; but most of it is miserable stuff. Only one-quarter pint of milk per day is the average used by each inhabitant of London. This means far less in the poorer districts, and in scores of rural, even pastoral neighborhoods, milk cannot be obtained. Yet nothing else will serve as an efficient substitute during the bone and tooth-forming periods, and perhaps more depends on the quality of the original tooth substance than any amount of care in afterlife.

To arrive at a decision as to the natural and best food for man, let us glean a little in other fields. Our cousins, from marmoset to anthropoid ape, find in fruits and nuts a sustenance that at all events produces perfect dentition. Place them in confinement, however, and feed on sopped bread and cooked foods, and they also develop caries. Man, like his nearest relative, is evidently of tropical origin. There, before even the stone age, when he made flint instruments, and long before the bronze and iron age, when cooking utensils were possible, he regaled himself on bananas, apples, pineapples, dates, figs, and possibly borrowed a few birds' eggs, and the flesh of any animal within his power. But it was not until long ages after, that, emigrating northwards and finding cereals and pulses had to supplement the smaller nourishment of our acid fruits, he learned all our lecturers tell us of the value of heat in the preparation of starch foods.

That the world must feed on wheat as its staple diet is often accepted as a truism, but the fact that bananas feed 60 people to the acre, against a possible five under wheat culture, is worth remembering. Some day, perhaps, our superexcellent milling machinery, which produces that tenth-rate diet, white flour, will pass away and the sweet fruits of the tropics form the basis of our national food. Already tens of thousands of tons of bananas, the richest nitrogenous fruit, are consumed here, and no better addition to a child's bill of fare can be named than a few of these daily. Sugar, as we found, is craved, and it is because man's natural food, human milk and tropical ripe fruits, contain it in such abundance, but elaborated as no refiner on earth can do.

A few years ago Dr. Densmore threw a bomb-shell among the vegetarians by a series of articles against the use of all starch foods. He showed very cleverly the unsuitability of starch for man's intestines, how the stomach simply has to act as passer-on and its vital forces are wasted; how the teeth are directly exposed to decay by the presence of such readily fermenting particles, and the arteries prematurely aged by the undue proportion of earthy salts in cereal foods. Better meat than wheat, better milk and eggs than potatoes and rice, best of all, ripe, raw fruit and nuts.

From a dental point of view (and in a general way what is right there is right for the whole body), a perfect diet for children would be about as follows: Milk for the first year; milk plus ripe bananas, dates, etc., for the next period; and an occasional egg for the next period; and as the stress of life's work requires extra supplies, add meat, butter, cheese, nuts (the finest things for mastication), and let bread, potatoes and puddings take a place far away at the end of the list.—*Brit. Jour. Dent. Sc., July, 1897.*

THE DIFFUSIBILITY OF COAGULANTS IN DENTIN. By E. Lawley York, D.D.S., Chicago. Read at Illinois State Society, May, 1897. These experiments were made in various ways to show that carbolic acid will diffuse through dentin, in freshly extracted teeth that at the time of extraction were normal, also in teeth freshly extracted that had putrescent pulp canals; in the latter I found that there was slightly more rapidity of diffusion.

After opening into the pulp-chamber from the lingual or coronal aspect, according to the tooth that I was treating, and after gaining sufficient room to pass a hypodermic needle into the pulp-chamber, thus avoiding cutting away the tooth structure unnecessarily, I removed the pulp, dried the canal or canals, as the case might be, and sealed the foramen at the apex with gutta-percha. I then injected a small quantity of a 95 per cent solution of carbolic acid, which had been previously colored with a minute quantity of fuchsin, sufficient to fill the pulp-chamber and about two-thirds of the canal, thus avoiding any oozing out upon sealing the crown with gutta-percha. I then wrapped the teeth in wet gauze and placed them in a receptacle I had made that would keep them at about 98° F. My aim through my experiments has been to make them as nearly as possible under the same conditions that are met with in the mouth. The earlier experiments were generally with teeth left in the incubator twenty-four hours at least, but later I found that carbolic acid would pass through the dentin as far as the cementum in eighteen and one-half hours.

On taking them out of the incubator I made cross-sections to preserve the bulk of the tooth for reference. In making a longitudinal section the tooth would be spoiled and only the section left; so that I should not have been able to show you the remaining portion from which the section was made. These were all mounted in Canada balsam, and show that the colored carbolic acid has passed entirely through the dentin.

The next series of experiments consisted in placing in the canals and pulp-chamber as much carbolic acid as would be used in the ordinary treatment of a tooth. After sealing the teeth I placed them in a bag that was tied to the nozzle of a faucet, and water was allowed to flow over them for two or three hours. The cementum was then ground off on two sides of the root, washed again, and the teeth suspended in water nearly up to their anatomical necks. The earlier ones I usually left twenty-four hours, but later I found that eighteen and one-half hours was sufficient time to detect carbolic acid in the water with the bromin water test.

In some cases I coated the whole of the tooth with sandarac varnish to prevent the possibility of any carbolic acid coming in contact with the tooth structure. Out of the many hundred tests made I did not fail in a single case to detect carbolic acid in the water.

Later on, at the suggestion of Dr. P. J. Kester, I selected sound teeth whenever I could and opened from the apex, slightly enlarging the foramen, and passing the carbolic acid in this way into the pulp-chamber, then sealing and coating with sandarac varnish, washing, etc. I suspended the tooth in water, crown down, thus excluding any possibility of leakage. The results are just the same—carbolic acid in the water.

The following experiment was intended to demonstrate that carbolic acid does not form an impenetrable coagulum at the orificial end of the dentinal tubuli, with their albuminoid contents. A tooth was taken that had contained a 95 per cent solution of carbolic acid in the pulp-chamber and canals for seventy hours. The canal was dried, and a saturated solution of sodium chlorid was inserted by means of a hypodermic syringe. The end was sealed with gutta-percha and then coated with sandarac varnish. This was allowed to dry, after which it was washed one hour with water. The tooth, which had been opened only at the apex, was suspended in water, crown down, about two-thirds of its length being immersed. In three hours I tested the water with a drop of a 25 per cent solution of argent. nitras, which resulted in large quantities of the chlorid of silver being thrown down, thus proving beyond a doubt that the coagulum formed by carbolic acid is not a barrier to the passage of other substances through the dentin, as has been so often stated.

Test for diffusion in coagulated albumen. I took a hard-boiled egg, sawed off one end, carefully removing first the yolk and then the remainder of the shell, placing the rest in a small wine-glass containing about one and one-half teaspoonfuls of water. I then poured in the space previously occupied by the yolk some carbolic acid. This was left for twenty-four hours, with the assurance from those who saw it that carbolic acid would never penetrate it. When I tested the water it was so loaded with carbolic acid that I had to pour it into a larger vessel to accommodate the quantity of bromin water required. The next time I made this test I found carbolic acid would pass through in two hours.

A pulp which is in a congested or hyperemic condition, as the result of blows, exposure, thermometrical changes, ingress of micro-organisms, etc., is especially liable to disturbances resulting from blood stasis, owing to vessels both entering and leaving the same narrow foramen; the pulp is consequently in all probability subject to strangulation or stasis. The changes that now take place are not chiefly inflammatory, but necrotic, followed by secondary decomposition and putrefaction.

Here we have to do with the death of tissue occurring under special conditions, and resulting in the formation of coagulated albuminoids; but the coagulation takes place, not in a liquid, but in the substance of formed tissue elements, in cells and cellular or intercellular structures. If by reason of arrested nutrition, or by the action of chemical or thermal agencies, a definite segment of an organ undergoes death, this gives rise to coagulation within the tissue for the reason that the lymph contains fibrinogen, the cells contain fibrinoplastin, and from these substances fibrin is produced. Hence Cohnheim introduced the word coagulation necrosis to describe this special form of local death, viz., necrosis with fibrin formation. Coagulation necrosis may also be found combined with other retrogressive changes, as fatty degeneration. What we are in the habit of speaking of as ulceration is not true ulceration in a pathological sense, but in its incipiency, at least, coagulation necrosis.

With this array of facts staring us in the face, what course of treatment are we to pursue? Nature is forming a coagulum. Should we not attempt to assist her by hurrying artificially those changes which she will in time produce spontaneously?

The cause, in my opinion, of so-called lame teeth, and it is also the clinical experience of a large majority of the best men in the profession, is imperfect root filling, not the use of coagulants. We so often see pulpless teeth in the mouths of our patients, without any root filling, when the whole crown is decayed away and the pulp-chamber and canals are reeking with purulent matter. The patient will reply upon inquiry that the tooth has never given any inconvenience. This condition can be accounted for only in one way, namely, that the foramen is obliterated or closed—encysted, if you like—consequently none of the septic matter can pass through the foramen and set up irritation and consequent inflammation of the peridental membrane. I do not think there ever was a so-called lame tooth caused by the septic matter contained in the canal or canals of a tooth passing through the dentin and cementum and setting up irritation and inflammation of the peridental membrane. It must pass through the apical foramen to cause such a condition.

Dr. Harlan, in a paper read before the Iowa Dental Society, says: "Carbolic acid melted was introduced into the pulp-chamber very carefully, to avoid getting any of the acid in the crowns or on the outside of them. After the lapse of twenty-four or forty-eight hours, respectively, iodin tincture was introduced in the same manner as first described above. If the iodin penetrated the dentin, it would pass through the cementum and turn the starch blue. It did not penetrate, hence no blue stain. Iodin is soluble in carbolic acid; carbolic acid is soluble in alcohol; both are coagulants. Carbolic acid is sparingly soluble in water, iodin is soluble in water 1 to 7,000 parts. This is one of the best experiments that could be used as a test for diffusion." Another series of experiments was made with the tincture of iodin alone. The results were negative.

To test the value of this experiment I ground a tooth and placed it in a bottle containing water. I took a small quantity, to which was added a drop of Lugol's solution of iodin. A few drops of the mixture were tested with dilute starch paste with no consequent reaction. This was precisely the same test that Dr. Harlan made, with the exception that the teeth in his case were intact. The reason there was no reaction was that the tinc. iodin combined with the salts of the tooth and formed iodids of the base with which it united, leaving no free iodin. Consequently we could not get the reaction of the iodin. Control test for the above. The same starch paste, with one-tenth the quantity of iodin and water, gave the blue iodid of starch very distinctly.—*Dental Review*, *July*, *1897*.

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LITTER OF SUPERNUMERARY TEETH. By G. Lenox Curtis, M.D., New York. A patient aged 21 years, with a history of a full set of deciduous teeth and no extraction of the permanent set, presented herself, complaining of pain and some swelling in the jaw near the symphysis. Examination revealed the absence of the inferior left lateral incisor, the left central being slightly loose and tender on pressure. A slight space intervened between this and the cuspid, the cusp of which was tilted forward and the apex well back, encroaching upon the bicuspid. Suspecting an unerupted lateral, a shell probe was passed through the gum and periosteum until a glistening subject resembling enamel was reached. The patient was so highly sensitive and hysterical that further examination was deferred until the time of operation. An incision in the gum was made directly over the tumor at the apex of the root, the periosteum was opened and laid aside so as to expose the contents. Here were found seven teeth nestling together in a cavity about the size of a denuded peanut. The roots were like the spokes of a wheel radiating outwards, some almost penetrating the gingival margin of the gum projecting above, while others were close to the lower border of the jaw. The cavity in which they were confined was perfectly smooth and without a sac. The roots of the teeth were pointed like tacks and were from one-sixteenth to a quarter of an inch in length, the crowns uniformly being an eighth. They closely resembled small inferior incisors of the temporary set, the crowns of only two showing clear enamel, the others being clump shape with a growth of yellowish color much resembling exostosis. On opening the teeth they contained a pulp same as a normal tooth. This beats my record by four at a single birth. Around one of the largest teeth was a sac, highly inflamed, filled with fluid, and from this, no doubt, the trouble arose.—*Dominion Journal, July, 1897.*

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ACID TANNING. By Dr. F. S. Brooks, Martinez, Cal. About seven months ago, I commenced experimenting with a combination of chromic and sulfuric acids in the mummification of pulps, where portions remain in inaccessible root canals, and although the time may be too short yet to say what the permanent results will be, I have demonstrated one thing at least, and that is, that as a mummifying agent this combination is unequaled.

My first experiments were upon pieces of raw beef; I took some pieces of meat one-half inch or more in thickness, and placed on them a few crystals of chromic acid, then a drop or two of dilute sulfuric acid (fifty per cent) and left them over night. The next morning they were found to be perfectly tanned, being very hard and tough, of a yellowish color, and impervious to water; after several hours' immersion they were perfectly dry. A similar method is employed in some tanneries, where rapidity is the desideratum.

The next experiment was upon the pulp of a lower sixth year molar, the root portions of which I found it impossible to devitalize or remove. A few crystals of chromic acid were placed in the pulp chamber, then a drop of fifty per cent solution sulfuric acid added, which was worked into the root canals as far as the patient could endure. This was followed by a paste of iodoform and oil of cassia, and the tooth filled permanently. This was over seven months ago, and so far has given no trouble, except that for an hour or so after the operation there was some pain. This, I find, is the case in nearly all the teeth which I have treated in this way, but is usually not severe and lasts but an hour or so, and is caused, I presume, by the chromic acid (which has a remarkable tendency to spread) passing through the apical foramen.

I have treated quite a number of teeth in this way since, and have yet to record a failure. Recently, instead of using the chromic acid in crystal form, I have prepared a solution of equal parts chromic and fifty per cent sulfuric acids, which is kept ready for use in a glass-stoppered bottle.

A convenient way of applying is to take a glass tube, such as is used for a drinking tube, and by heating in the flame of a Bunsen burner, draw out to a fine point. This can be dipped into the acid and will take up a small quantity, which can be applied to the entrances of the canals. It is not necessary to flood the pulp-chamber, a very small quantity being sufficient. It is well to have two or three of these tubes, bent at right angles for convenience.

Great care should be exercised to avoid touching the soft tissues, as its effects are anything but pleasant; it can be neutralized, however, by a solution of bicarbonate of soda, which should be kept ready in case of accident.—*Items of Interest*, *July*, *1897*.

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PERICEMENTAL ABSCESS. By Dr. D. D. Smith, Philadelphia. Read before Union Meeting at Old Point Comfort, Va., April, 1897. The form of alveolar abscess here denominated pericemental abscess, in so far as the author is aware, has heretofore never been described, if, indeed, it has been distinctly recognized. It is an affection by no means common, and yet it occurs with a frequency to demand recognition and careful description.

Whilst the cause or causes of this trouble may be difficult of explanation, when once developed its recognition and diagnosis is comparatively easy and certain. The writer saw a number of cases of this affection before distinguishing between it and the ordinary form of alveolar abscess, and it required repeated failures in treatment before its distinguishing peculiarities were recognized. When once clearly differentiated it stands prominent and alone as a pathological condition of the teeth. It occurs on the pericementum of teeth with living pulps, as frequently perhaps as on those with pulps devitalized, and yet there are connected with it distinguishing characteristics clearly demonstrating its presence in either case. The abscess is never found at the apex of a root. It has no external fistula, neither is it accompanied by marked inflammatory manifestations nor by swelling. There is no discharge of pus from it, neither odor emanating from it in the canals of devitalized roots with which it may be associated; there is no marked increase of inflammation from medicating or tightly stopping such canals. It occurs more frequently in connection with upper than with lower teeth.

The seat of the abscess, from the author's observation, is always adjacent to some irregular formation in single-rooted teeth, and just above the bifurcation on the inner side of one of the roots of other classes of teeth. The sac of the abscess, if it may be spoken of as a sac, is always tightly adherent to the pericementum, and on extraction comes away entire on the root. The sac appears to be of an irregular glandular formation, not uncommonly having free globules of pus distributed over the surface of the glandular mass.

The diagnostic symptoms are, first, a dull, almost constant pain in the tooth and parts immediately adjacent; the root more or less loose, with pain increased markedly when pressure is made upon it in certain directions; the inflammatory symptoms are not at all commensurate with the pain nor with the apprehensions of the patient; little or no swelling attends it and no pus discharge. No relief is experienced from usual methods of treatment, as opening into the root or from external applications.

It is perhaps more likely to be confounded with pericementitis than with any other trouble, although there might be cases where it would be difficult to distinguish between it and root-absorption, especially in upper molars.

Differential Diagnosis. *Pericementitis*:—Pain on pressure acute, and alike in all directions. Looseness not great. Pain on tapping very great. Pain increasing from the first, and accompanied with inflammation and swelling. Occurs generally in connection with devitalized teeth and roots. Some known local irritant the cause, as irritated or putrescent pulp, a blow, or wedging. *Pericemental Abscess*:—Pain on pressure less acute and more marked in certain directions than in others. Looseness quite marked. Pain from tapping not great. Pain not markedly increased with time, but a feeling of apprehension induced; inflammatory symptoms not marked, and no swelling. Occurs in connection with teeth having living pulp as frequently as with roots having devitalized pulp. No recognized cause.

Pericemental abscess occurs usually in anemics. Prognosis always unfavorable. Have never been able to afford permanent or positive relief. Remedy, extraction.—*Dental Cosmos, July, 1897.*

CARBOLIC ACID TEMPERS STEEL TOOLS, according to the *Engineer*, which quotes from a French source. M. Levat, who recommends its use for this purpose, tempered one cold chisel in water, and another in a solution of carbolic acid, after both had been heated to a cherry red. The chisels were then set to work on extra hard wrought iron, and it was found that the one tempered in water became notched after a short time, whilst the one tempered in carbolic acid remained perfectly intact. A second test was made with two puddled steel bars, which were heated to white heat and tempered in water and carbolic acid respectively. The bar tempered in carbolic acid showed a much finer fracture, which reflected like a mirror when filed, and its carbon contents were not increased, but in the bending test it showed more elasticity and pliability than the other, while its hardness made it more suitable for tools.

X-RAYS AND FOREIGN BODIES IN THE AIR PASSAGES.—At a meeting of the Paris Academy of Medicine, M. Berger showed a skiagraph of a pin present in the pharynx just above the hyoid bone of a child two years old. By aid of this means the pin was readily removed. In a case at the Nottingham Children's Hospital, a child was said to have swallowed a piece of slate pencil and had every symptom of a foreign body in the air passage. The X-rays discovered nothing, but eventually nearly a month later, during a violent attack of coughing, a piece of slate pencil three-quarters of an inch long was ejected. The remarks of most interest in the case by Dr. Marshall are, firstly, that slate is found to transmit the rays and so could not be seen, but composition slate pencil is well defined. The second point is that he disagrees with authorities, such as Gray and Erichsen, who state that the right bronchus is the one in which foreign bodies usually lodge. All the cases he has seen have been in connection with the left. He therefore thinks that the passage into the left bronchus is easier than is generally supposed, and that the statement usually made requires correction.—*Brit. Jour. Dent. Sc.*

Letters.

EIGHTEEN OUT OF FORTY-FOUR PASS.

CALIFORNIA, August 10, 1897.

To the Editor of the Digest,

DEAR DOCTOR:—I send you this clipping from a daily paper, thinking it would be of sufficient interest for publication; also to let you know that the California Board does not pass everyone who applies for examination.

The annual session of the State Board of Dental Examiners closed yesterday at San Francisco. Out of the 44 applicants only 18 passed successfully.

The membership of the board for the next year is as follows: President, Dr. F. W. Bliss, Santa Cruz; Secretary, Dr. W. A. Moore, Benicia; Drs. F. H. Metcalf and F. F. Tebbets, of Sacramento; Drs. Thos. Morffew, Ducker, and Backman, of San Francisco.

Respectfully,

A MEMBER.

PHILADELPHIA LETTER.

PHILADELPHIA, August 13, 1897.

To the Editor of the Digest,

DEAR EDITOR:—For many years Pennsylvania has been known for its political caucuses, and during late years the name of Quay is somewhat mixed up in them. It would be a surprise if small or individual organizations should not follow the general customs of the state. For five months with untiring energy the leaders worked to complete their caucus in the Pennsylvania State Dental Society, and so perfect was it that Quay with all his power never had anything with which it could be compared.

We hear much praise about our new dental law, but practically it is very defective. American dentistry derived its reputation from its mechanical skill and manipulative ability, but this law goes to the other extreme. Look at the qualifications—General Anatomy, Physiology, Special Dental Anatomy, Dental Physiology, Chemistry, Dental Histology, Metallurgy, Materia Medica, Anesthesia, Oral Surgery, Therapeutics, Bacteriology, Dental Pathology, Principles and Practice of Operative and Prosthetic Dentistry. But a certificate from the demonstrator of the college from which a student graduates will be accepted as evidence of his manipulative ability.

Then look at the loop-hole. Anyone from any part of the United States, be he artisan, carpenter, blacksmith or cobbler, may live in Pennsylvania from September first to October first and commence practicing dentistry, and by this new law he is legally qualified as a dentist for the rest of his days.

I understand that the union of the Southern and the American went through without apparent opposition. Doctor Rich, who was temporary chairman, demonstrated what a positive character he is, to the amusement of many members. QUAKER.

NEW YORK LETTER.

NEW YORK, August 20, 1897.

To the Editor of the Digest,

MR. EDITOR:—Another of the faithful ones has dropped out of the lines—Dr. W. S. Elliott, well and favorably known in the vicinity of Greater New York. Thirty-five years ago he left Sag Harbor, the field of his first practice, and settled in Goshen, and became an active participant in the enthusiastic society movements of those days. Dr. Elliott had a good quality of brain and more than ordinary good purpose of heart, and he at once put his hand to the oar. His writings are quite above the mass of the literary products of our journals and we have always prized his conversations highly during these many years. In inventive genius he has left a good record. Among the first was the "Elliott Suspension Engine." All his work has the stamp of faithful workmanship, particularly his office practice. His life has shown no little of the world's so-called hardships, but he stood diligently at his post. For the last two years he occupied his first field of practice, Sag Harbor. His works will remain to remind us of his industry and contribution to the general fund of professional acquisition.

We take this from the *New York Herald*, not bad as the forerunner of a case for damages, possibly a question of jurisprudence:

> SWALLOWED TOOTH FILLING.—Middletown, N. Y., July 28, 1897.—Charles Shepard, of New York, who has been boarding at a farm-house near Otisville, is dangerously ill as a result of swallowing a gold tooth filling, and was to-day removed to New York on a cot. While laughing a few days ago Mr. Shepard felt the filling drop from one of his teeth. He made an effort to secure it, but it disappeared down his throat. "That will cause me serious trouble, I fear," said Mr. Shepard to a friend, who advised him to think no more about it. A few days after Mr. Shepard was taken seriously ill with appendicitis and is now in a critical condition.

Who's responsible? Some of our many dentists who have suffered with appendicitis should condole with this unfortunate.

Isn't it about time to call a halt when a lady has half the hair taken off her head and her face and neck burnt to a blister by X rays? New York has a decided excitement on her hands over an effort to diagnose an obscure case of dental pain, with the results as above detailed. We give it as our private opinion that brains is a safer commodity in dental practice than so much hurried experiment with electricity. The non-ability among the mass of practitioners to diagnose dental difficulties is something sad to contemplate. Well, the case in point indicates a suit for damages, and then look out for "expert" ability. Very commonplace men are coming to the front in these days when journals can be used partially or practically to bolster up assumptions instead of good judgment and a fair amount of actual knowledge. These things are being emphasized among thinking men and we think moral character should play an important part in the qualifications of a practitioner. New York has a law on her statute books for regulating these things, but there is truth in the saying that "water will not rise above its head."

Chicago this time—$2,900 for treating pyorrhea. Who says there is no money in dentistry—excuse us, this comes under the new head of "Stomatology." We are told that new revelations are coming by the way of Moscow regarding the cause of this mysterious malady. Well, who will fiddle while that paper is being read in Moscow? We think it will be Bonwill, for he declares that the cause is "improper occlusion," or mal-occlusion. Gentlemen, no one of you will ever be able to place the cause (scientifically), it is beyond the findings of the finite mind. No, not even the younger generation. Nothing but some of the phases of truth can be demonstrated.

Surely Moscow is safe, for some of the older men will be in council there and these younger men will not have a free field. Talbot and Bonwill guard our honors on this question; the first is "hot water, sure cure"; then, "sulfuric acid," and then, yes, and then. In the meantime there is a large practical dealing on the lines of medical help. It is now the most talked of subject, with but very little light, and the most neglected of anything in the line of intelligent practice. We see vivid evidences of this constantly. Let men demonstrate more and talk less, and one can see better which way the wind is blowing, for there is much blowing. When men are so far off, claiming to be scientific, and become antagonistic for the sole purpose of gratifying a selfish pique against a sister society, then so-called science falls into muddy places, the proud distinction trails in the mud, and associated bodies fall into uselessness.

New York has another episode in dental practice. A patient becomes insane in the public streets from the use of cocain after the extraction of teeth. We overheard a conversation regarding the use of this drug between two practitioners, one well known and of large experience. The younger one said, "I do not find any difficulty, used in my way." The older one replied, "I felt so till I had a case lying in my chair for over three hours and then it went into the hands of a physician. The consequence was, I had to deduct $70 from my bill to meet the charge of the physician. I don't use cocain now; I use carbolic acid, one per cent, and am successful and have no trouble."

The White Mountain convention was a success. It had more than a few; there were just fifteen present, so all of them got into office. The parlor car attachment and the banquet had no friction—nothing like success. It is an item of interest, but all did not get a prize. On the whole there is no fault to be found; they paid their own bills.

Dr. LeRoy is attending all the summer gatherings. He travels on his own schedule time, for he uses his wheel. He goes from Old Point Comfort to the battle fields of Virginia, on to Gettysburg, and so on home.

We have read "The Open Letter" in the *Cosmos*. Well, it proves only this, that politics have their price in all parties that depart from the true object of association. We do not expect to see any change for the better unless the real object of dental societies is given the prominence—that scientific and fraternal attainments only are sought. Will this become the central purpose? Now's the opportunity, as we have a national association of dentists. How much better this sounds—an association that covers the ground. This offers a rare chance for Dr. Fillebrown, the president, and he strongly favors the National Museum at Washington. Somehow we are impressed that quicker blood is going to flow and better results will follow. Our best wishes will go with Dr. Fillebrown and the new body. Omaha is a good place to start off, for if we are not much mistaken there will be an infusion from the northwest and southwest. New members will bring new energy, the northwest is full of it, and there may be a delegation from the Klondike by next autumn, for we hear that the gold fever is taking hold of some of our dentists. "Go to Klondike, young man," so would say Horace Greeley.

We learn that the late Prof. Abbott's place is to be filled by Dr. Starr, the present president of the First District Society. His appointment is very generally thought a good one.

It seems a pity that in these days of needed advance there could not be someone brought under a strong conviction and then have the courage of his convictions to help put them into force. One much-needed reform is to bring about a radical change in the method of teaching, particularly in the operative department. What Dr. Atkinson advocated and carried out as far as he could, that "there was no power in anything but demonstrated and conversational teaching over the patient;" and we are fully convinced that it is absolutely true, just as true as it is that all the preaching in the pulpit carries no conviction unless the one there knows the truth of what he says and can give testimony. How true it is that "words are cheap." The infirmary practice shows too sadly the deficiency of the kind of teaching we have mentioned, and there are too vivid indications of this great need shown by what is given as intellectual weakness by the Jersey examinations, as noted in the August *Items of Interest*. There is a great gap somewhere; will it be filled? Cordially, NEW YORK.

A HARD DRILL can be made by heating to a cherry red and cooling in mercury.

TO TAKE AWAY ODOR OF IODOFORM.—All persons using iodoform know how difficult it is to remove its odor from the hands or from instruments. Use spirits of turpentine on the hands or instruments; it can be added to water, and in using soap makes it very efficacious.—*Le Progres Medicale.*

REMOVAL OF THE MYELOID SARCOMA WITHOUT SACRIFICE OF BONE.—Mr. C. Symonds showed a boy, aged 15, from whose lower jaw he had removed a central myeloid sarcoma on Jan. 20, 1896. The tumor had destroyed a large portion of the jaw, only a bridge of bone being left on either side of the middle line. The tumor passed back under the tongue and was removed by erasion without sacrifice of bone, leaving the lower border of the jaw, as well as a bridge of bone along the alveolar process. There had been no recurrence and the patient has now a firm, bony jaw.—*Brit. Jour. Dent. Sc.*

The Dental Digest.

PUBLISHED THE

TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

AN ENCOURAGING OUTLOOK.

The recent meetings at Old Point Comfort were of more than usual interest. Despite the fact that the American and Southern Associations had separate programs and held separate meetings at the same hours, each had good meetings and a fair attendance. Notwithstanding that much time and interest, which would otherwise have been devoted to literary work, were consumed by the formation of the National Association, the published proceedings will show a great improvement over previous years. And when we all meet together next year at Omaha, with the sections well organized for work, what may we not expect?

REPLY TO DR. CASSIDY.

On page 451 of the current issue will be found an admirable address by Dr. J. P. Cassidy. In it he challenges a statement which we made, that "there was not a single dentist in this country who could make an accurate quantitative analysis of any dental amalgam," and says that hundreds could do so, if it were necessary.

Perhaps we put it too strongly, so we will modify it and say that very few can do so. We will, however, make another proposition, which is much more important from a practical standpoint, that the dental profession do not know how to select the most desirable alloy from the great variety offered them. Furthermore, we are prepared to prove that many of the most skillful operators are using the very poorest makes of amalgam. We do not care to discuss this question just now, however, but will reserve it for our next issue, when the report of Section III of the American Association will appear.

LAST MEETING OF THE AMERICAN.

The last meeting of the American Dental Association was held August 6, at Old Point Comfort. This closed an organization which has been an important factor in the profession for over 30 years. It has had a great career, and those who have taken an active part in its work may well be proud of what has been accomplished. At times it seemed as if not much good were being done, but take a careful survey of its work and influence from the beginning, and who can estimate its power for good?

Although we were active in reorganizing the two bodies into the new association, and feel much encouraged at the outlook, yet when the last session of the good old society came it was sadder than we had expected, and this feeling was shared by all who had been workers in it. There were but two of the original members present, but there were several who had been constant attendants for from 20 to 30 years, and the "experience meeting," which was the last, brought forth unusual feeling and showed that the memories of the American Dental Association will die only with those who composed it.

SPECULATING IN FUTURES.

Rumors are afloat that the National Association of Dental Faculties at their recent meeting adopted rules which lower the standard of requirements for students entering the various dental colleges. Last year it passed rules to go into effect in the fall of 1897, requiring an adequate amount of education of those who were received into the colleges of the association. This was based on an ascending scale, so that each year the requirements were made greater. Commendation and praise were heard on all sides because of this action, and rightly.

An examination of the proceedings of the Faculties' Association for this year would seem to indicate, however, that all these reforms and higher standard of requirements existed only on paper. We can judge only from their proceedings, which are published in this issue, but if the following resolution is not a step backward we are much mistaken:

> The rule regarding preliminary qualifications adopted in 1896 was declared to have been adopted in an unconstitutional manner, and was therefore rescinded. The following was adopted in its place, and by unanimous consent was ordered to go into effect at once.
>
> *Resolved*, That the minimum preliminary education requirement of a college of this association shall be a certificate of entrance to the first year of a high school, or—in states that have no high school—of graduation from a grammar school, or its equivalent, to be determined by an examination.
>
> *Resolved*, That nothing in the above shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

If the Faculties' Association can pass resolutions and rules of requirements one year to take effect the next, and at the next session can rescind the former action, we think it will be wise in future to withhold the praise until the reforms go into effect.

We give the following from the proceedings of last year:

> Mr. Melville Dewey, secretary of the Board of Regents of the University of New York, appeared before the association by invitation of some of the members, and gave a masterly address on the needs of the movement for higher education in professional ranks. Incidentally, Mr. Dewey explained some of the details of the system pursued in New York, and stated that, greatly to the surprise of those in charge of the various professional educational institutions in the state, the number of students had steadily increased since the higher requirements had been put into force by the Board of Regents.

While reading this, without being able to hear the masterly address, the question naturally arises—was it the masterly part of the address, or the information that raising the standard increased the number of students, which influenced the Faculties' Association to adopt the higher rules for 1897?

Speculating in futures would seem to be as uncertain in college faculty associations as in other lines. There is this important difference, however. The Faculties' Association can do so without being called upon for margins to cover losses which often occur when dealing with staple commodities. It can therefore speculate in futures without much danger of suffering financial loss.

A UNITED FRONT.

The consolidation of the American and Southern Dental Associations into the National Dental Association is an accomplished fact. For years there has been a desire on the part of many in both organizations to have this brought about, but not until this year did it seem best to take the steps necessary for union. The sentiment at the recent meetings was so unanimously in favor of the action taken that surely we can now present a united front.

The constitution and by-laws prepared by the two committees were adopted almost without change, although some features were not what all desired. Yet so strong was the desire for union, that individual objections and wishes were wisely withheld, and the new organization was at once completed.

Heretofore when our profession has been thought of in society work it has always presented itself in two parts, but this division is now gone. The next step is for us all to work our hardest and get a much larger per cent of the profession into the societies. At present not more than one-fourth of the practicing dentists belong to any dental organization. Think of over three-fourths of this great profession going it alone and not getting the great benefit of associated effort, such as our dental societies offer. We must be in earnest about remedying this defect, and all society members should do their part.

Notices.

BI-STATE DENTAL MEETING.

The bi-state dental meeting of the Southwestern Michigan and Northern Indiana Dental Societies will be held at Benton Harbor, Mich., Sept. 14-15, 1897. A cordial invitation is extended to the profession in these and other states to attend. F. H. Essig, Secretary.

MINNESOTA STATE DENTAL ASSOCIATION.

The fourteenth annual meeting of this association will be held at Minneapolis, September 8–10, 1897, in the dental department building of the State University. An interesting program is being prepared and a good meeting is assured. A cordial invitation is extended to all dentists outside of the state and those in the state are urged to come and join with us. Reduced rates will be given, as the State Fair will be held during that week.

H. L. Crittenden, Secretary.

FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

This society will hold its 15th annual meeting at Streator, Ill., Sept. 14–15, 1897. An invitation is extended to not only the members of the society, but to all dentists in this state or elsewhere who may desire to enjoy the program arranged for this occasion. A splendid program of clinics and essays has been arranged, and with the discussions that may follow will make a treat too rare to be missed by any live dentist. So come one and all. If you have a bright idea or a new method or appliance, bring it along and do us good. If you do not know anything new, come just the same and we will do you good.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

At the annual session of the above association, held at Old Point Comfort, Va., July 30–August 2, 1897, with 22 states present, the following officers were elected for the new year: President, Dr. C. G. Edwards, Louisville, Ky.; Vice-President, Dr. G. L. Parmele, Hartford, Conn.; Secretary and Treasurer, Dr. Chas. A. Meeker, Newark, N. J. The president appointed as members of the Committee on Colleges, Dr. G. Carleton Brown, Chairman, Elizabeth, N. J.; Dr. H. H. Johnson, Macon, Ga.; Dr. M. H. Chappell, Knightstown, Ind. Dr. L. Ashley Faught, 1415 Walnut street, Philadelphia, was appointed Secretary by the Committee.

SOUTHERN DENTAL ASSOCIATION, BRANCH OF THE NATIONAL DENTAL ASSOCIATION.

The following officers were elected for the ensuing year:—President, Dr. E. P. Beadles, Danville, Va.; First Vice Pres., Dr. W. E. Walker, Pass Christian, Miss.; Second Vice Pres., Dr. T. P. Hinman, Atlanta, Ga.; Third Vice Pres., Dr. F. P. Welch, Pensacola, Fla.; Treasurer, Dr. D. B. Brabson, Knoxville, Tenn.; Cor. Secy., Dr. C. L. Alexander, Charlotte, N. C.; Rec. Secy., Dr. S. W. Foster, Atlanta, Ga. Executive Committee, Dr. N. E. Turner, Raleigh, N. C.; Dr. S. B. Cook, Chattanooga, Tenn.; Dr. W. T. Arrington, Memphis, Tenn.; Dr. R. K. Luckie, Holly Springs, Miss.; Dr. W. R. Clifton, Waco, Texas; Dr. H. E. Beach, Clarksville, Tenn. The next meeting will be held at St. Augustine, Fla.

THE NATIONAL DENTAL ASSOCIATION.

Following are the officers of the new organization:—President, Dr. Thos. Fillebrown, Boston; Vice Pres. from the East, Dr. James McManus, Hartford, Conn.; Vice Pres. from the West, Dr. L. L. Dunbar, San Francisco; Vice Pres. from the South, Dr. B. Holly Smith, Baltimore; Rec. Secy., Dr. Geo. H. Cushing, Chicago; Asst. Rec. Secy., Dr. W. E. Walker, Pass Christian, Miss.; Cor. Secy., Dr. Emma Eames Chase, St. Louis; Treasurer, Dr. Henry N. Morgan, Nashville, Tenn. Executive Committee, for three years, Dr. J. N. Crouse, Chairman, Chicago; Dr. V. H. Jackson, New York City; Dr. L. G. Noel, Nashville, Tenn. For two years, Dr. M. F. Finley, Washington, D. C.; Dr. J. D. Patterson, Kansas City; Dr. H. A. Smith, Cincinnati. For one year, Dr. Geo. Eubank, Birmingham, Ala.; Dr. W. P. Dickinson, Minneapolis; Dr. C. N. Peirce, Philadelphia. The next meeting will be held at Omaha, Neb.

LATEST DENTAL PATENTS.

586,727.	Dental Instrument, John W. Hard, Tacoma, Wash.
587,775.	Clamp, Frank J. Yockel, Allegheny, Pa.
587,058.	Rubber-Dam Clamp, Samuel E. Knowles, Alameda, Cal.
587,223.	Head-Rest, Stewart D. McKelvey, assignor to F. E. Case, Canton, Ohio.
587,224.	Head-Rest Pad, Stewart D. McKelvey, assignor to F. E. Case, Canton, Ohio.
588,092.	Depurator, Karl L. Sandrowski, Berlin, Germany.

TRADE-MARKS.

30,437.	Toilet Preparations, including Soap, Dentifrice, and Hair Restoratives, Roger & Gallet, Paris, France.
30,438.	Same as 30,437.

(List furnished by John A. Saul, Patent Attorney, Washington, D.C.)

OLDEST PRACTITIONERS.—The two oldest living dentists now in practice in the United States were present at the Old Point Comfort meetings—Dr. W. W. H. Thackston, of Farmville, Va., and Dr. John B. Rich, of New York City. The latter commenced practice in New York in 1836.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The fourteenth annual meeting of the National Association of Dental Faculties was held at the Hygeia Hotel, Old Point Comfort, Va., commencing Friday, July 30, 1897.

The following members of the association were represented as noted below:

Alabama Dental College, Birmingham, Ala.—T. M. Allen.
University of California, Dental Department, S. F., Cal.—L. L. Dunbar.
Columbian University, Dental Dept., Washington, D. C.—J. Hall Lewis.
Howard University, Dental Department. Washington, D. C.—A. J. Brown.
National University, Dental Dept., Washington, D. C.—J. Roland Walton.
Atlanta Dental College, Atlanta, Ga —William Crenshaw.
Dental Dept. of Southern Medical College, Atlanta, Ga.—S. W. Foster.
Chicago College of Dental Surgery, Chicago—T. W. Brophy, L. Ottofy.
Northwestern University Dental School, Chicago—Theo. Menges.
State University of Iowa, Dental Dept., Iowa City, Iowa.—W. S. Hosford.
Louisville College of Dentistry, Louisville, Ky.—H. B. Tileston.
Baltimore College of Dental Surgery, Baltimore, Md.—M. W. Foster.
University of Maryland, Dental Dept., Baltimore, Md.—F. J. S. Gorgas.
Boston Dental College, Boston, Mass.—J. A. Follett.
Harvard University, Dental Department—Thomas Fillebrown.
Dental College of the University of Michigan, Ann Arbor, Mich.—J. Taft.
University of Minn., Dental Dept., Minneapolis, Minn.—W. P. Dickinson.
Kansas City Dental College, Kansas City, Mo.—J. D. Patterson.
Western Dental College, Kansas City, Mo.—D. J. McMillen.
Marion-Sims College of Medicine, Dental Dept., St. L., Mo.—J. H. Kennerly.
Missouri Dental College, St. Louis, Mo.—A. H. Fuller.
University of Buffalo, Dental Department, Buffalo, N. Y.—W. C. Barrett.
New York College of Dentistry, New York City—F. D. Weisse, J. B. Littig.
Cincinnati College of Dental Surgery, Cincinnati, O.—G. S. Junkermann.
Ohio College of Dental Surgery, Cincinnati, Ohio—H. A. Smith.
Western Reserve University, Dental Dept., Cleveland, O.—Geo. H. Wilson.
Pennsylvania College of Dental Surgery, Philadelphia, Pa.—C. N. Peirce.
Philadelphia Dental College, Phila., Pa.—S. H. Guilford, Leo Greenbaum.
University of Pennsylvania, Dental Dept., Philadelphia, Pa.—Jas. Truman.
Tennessee Medical College, Dental Dept., Knoxville, Tenn.—R. N. Kesterson.
Central Tennessee College, Meharry Medical Department, School of Dentistry, Nashville, Tenn.—G. W. Hubbard.
University of Tenn. Dental Dept., Nashville, Tenn.—J. P. Gray, L. G. Noel.
Vanderbilt University, Dental Dept., Nashville, Tenn.—H. W. Morgan.
University Col'ge of Medicine, Dental Dept., Richmond, Va.—L. M. Cowardin.
Royal College of Dental Surgeons, Toronto, Canada—W. E. Willmott.

The following schools were elected to membership:

Milwaukee Medical College, Dental Department, Milwaukee, Wis., represented by Reinhold E. Maercklein.

Tacoma Dental College, Tacoma, Wash., the constitution being signed by proxy by Dr. Kennerly.

New York Dental School, New York City, represented by John I. Hart.

Ohio Medical University, Dental Dept., Columbus, O., rep. by J. F. Baldwin.

Baltimore Medical College, Dental Department, Baltimore, Md., represented by J. W. Smith and William A. Montell.

The application for membership of the University of Omaha, Dental Department, was laid over till next year, at the request of its officers.

Applications for membership were reported by the Executive Committee from the Pittsburg Dental College, Pittsburg, Pa.; Dental Department of the College of Physicians and Surgeons, San Francisco, Cal.; Colorado School of Dentistry, Denver, Col.

The following report laid over from last year was adopted:

> "Your committee on choosing a color respectfully report that they have decided to recommend the standard lilac as the distinctive dental color, and they recommend the adoption of the academic costume according to the requirements observed by the intercollegiate system."

The resolutions laid over from last year, making the annual college term seven full months, and recommending that the annual meetings be held in connection with the National School of Dental Technics, and at a time of the year when the colleges are in session, were negatived.

A committee, consisting of Drs. Henry W. Morgan, M. W. Foster, Theo. Menges, C. N. Peirce and H. A. Smith, was appointed to meet a similar committee from the National Association of Dental Examiners, for the purpose of harmonizing the differences of opinion between the two associations. This committee reported rules which had been agreed upon by the two committees.

The report was discussed at length and again referred to the committee, which later reported, through the Executive Committee, a resolution, which was adopted, providing for the codifying and arranging of the existing rules of the association, and the preparation of such additional rules as may be deemed advantageous to both organizations in advancing the standard of dental education in the United States. On motion, the committee which had had the matter in charge in the conference was continued for this purpose.

A communication from the Dental Department of the State University of Iowa was received, asking consent of the association to its conferring the honorary degree on Dr. F. P. Weber, of Cherokee, Iowa. The request was declined on the ground that it is contrary to the practice of the association.

A similar communication from the University College of Medicine, Dental Department, Richmond, Va., asking the privilege of conferring the *ad eundem* degree on Dr. Thomas G. Cowardin, of London, Eng., was refused upon the same grounds.

The rule regarding preliminary qualifications adopted in 1896 was declared to have been adopted in an unconstitutional manner, and was therefore rescinded. The following was adopted in its place, and by unanimous consent was ordered to go into effect at once:

> *Resolved*, That the minimum preliminary education requirement of a college of this association shall be a certificate of entrance to the first year of a high school or—in states that have no high school—of graduation from a grammar school, or its equivalent, to be determined by an examination.
>
> *Resolved*, That nothing in the above shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

A communication was read from Dr. W. Mitchell, president of the American Dental Club of London, requesting the appointment of a committee to cooperate with a similar committee in Europe for the purpose of securing just recognition of the diploma issued by the colleges belonging to the association. The communication was favorably considered, and the president appointed as the committee Drs. W. C. Barrett, D. J. McMillen, S. H. Guilford, A. H. Fuller and Faneuil D. Weisse.

The Ad Interim Committee reported that one new question decided by them during the year was that a student who was in arrears for fees could not be accepted by another college if objection was made by the college to which he was indebted. This ruling was sustained by vote of the association.

The committee also recommended that steps be taken to secure definite knowledge as to the curricula and requirements of foreign colleges, so that the members of the association should be able to decide upon the standing of students coming from them. Referred to the committee appointed to consider the matter of Dr. Mitchell's letter.

A paper prepared by Dr. W. C. Barrett, Buffalo, N.Y., at the request of the Executive Committee, and entitled "The Study of Anatomy," was read by its author.

The paper was, on motion, directed to be incorporated in the official report and copies sent to the journals for publication.

A committee, consisting of Drs. S. H. Guilford, Theo. Menges and M. W. Foster, was appointed to select persons to prepare papers on subjects connected with the work of the association, to be read before the next meeting.

Dr. Barrett offered the following, which was adopted:

Resolved, That the final vote upon the admission of a college to this association shall not hereafter be taken unless a duly certified and qualified delegate is in attendance.

The following resolution, offered by Dr. L. L. Dunbar, was adopted:

Resolved, That in order to maintain a reputable standing in this association no college under its jurisdiction shall permit any member of its faculty or teaching staff. board of trustees, or stockholders to serve in a judicial capacity as a member of a state board of examiners.

Dr. Taft offered the following, which was adopted:

Resolved, That a committee of three on curriculum be appointed, whose duty it shall be to compare the schemes of study of the various dental colleges, with the view of harmonizing these schemes and making them as nearly alike as practicable, to report next year.

The Committee on Text-Books recommended the following: Essig's "American Text-Book of Prosthetic Dentistry," Hodgen's "Dental Metallurgy," Schafer's "Essentials of Histology" (fourth edition), Abbott's "Principles of Bacteriology" (third edition), Gray's "Anatomy" (last edition), Luff's "Manual of Chemistry," Burchard's "Compend of Dental Pathology and Therapeutics."

The report was adopted, and the committee was instructed to examine Kirk's "American Text-Book of Operative Dentistry," and Marshall's "Injuries and Surgical Diseases of the Face, Mouth and Jaws," and forward their views at the earliest possible moment to the secretary, in order that they may be incorporated in the printed Transactions.

A committee, consisting of Drs. M. W. Foster, William Crenshaw and L. G. Noel, reported appreciative resolutions on the death of Drs. Frank Abbott and Francis Peabody, late members, who have died since the last meeting was held. The resolutions were adopted.

The following lie over for final action till next year:

Offered by Dr. H. W. Morgan, seconded by Dr. H. B. Tileston:

Resolved. That on and after the session of 1899-1900, the regular sessions of each college belonging to this association shall be extended to four years.

Dr. J. Taft moved to amend the constitution to require applications for membership to be sent to the secretary of the Executive Committee instead of to the secretary of the association.

Offered by Dr. T. Fillebrown:

Resolved, That no college connected with this association shall confer any degree as honorary which is usually granted in due course of study and examination. All former rules on the subject are hereby repealed.

Offered by Dr. Barrett:

Resolved, That after the regular session of 1898-9 the annual college term for the members of the association shall be seven full months.

Dr. Crenshaw moved to strike out Rule 3 and adopt the following instead:

Resolved, That the time in which students can enter schools of this association shall be the first ten days of the session of the school, dating from the time announced in its catalogue.

The following were elected officers for the ensuing year: T. W. Brophy, Chicago, President; D. J. McMillen, Kansas City, Mo., Vice-President; J. H. Kennerly, St. Louis, Mo., Secretary; H. W. Morgan, Nashville, Tenn., Treasurer. J. Taft, Cincinnati; Thomas Fillebrown, Boston, Mass.; B. Holly Smith, Baltimore, Md., Executive Committee. James Truman, Philadelphia; F. J. S. Gorgas, Baltimore; J. Hall Lewis, Washington, D. C., Ad Interim Committee.

The newly elected president, on being installed, announced the following appointments: J. A. Follet, Boston, Mass.; H. A. Smith, Cincinnati, Ohio; L. L. Dunbar, San Francisco, Cal.; J. D. Patterson, Kansas City, Mo.; W. T. McLean, Cincinnati, Ohio, Committee on Schools. S. H. Guilford, Philadelphia, Pa.; William Crenshaw, Atlanta, Ga.; W. C. Barrett, Buffalo,

N. Y.; W. P. Dickinson, Minneapolis, Minn.; Faneuil D. Weisse, New York City, Committee on Text-books. J. Taft, Cincinnati, Ohio; Edward C. Kirk, Philadelphia, Pa.; A. H. Fuller, St. Louis, Mo., committee to select subjects and essayists for next meeting.

Adjourned to meet at the call of the Executive Committee.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The fourteenth annual session of this organization was called to order at 10:30 a. m., Friday, July 30, 1897, at Old Point Comfort, Va. President Abbott called the meeting to order. The secretary called the roll.

The following committee on credentials was then appointed: Drs. Moore, Parmele and Noble.

The committee on incorporation presented the following report:

Board of Dental Examiners for the District of Columbia.
Washington, D. C., July, 1897.

National Board of Dental Examiners:

Your committee appointed to secure the incorporation of the National Association of Dental Examiners respectfully report that after legal consultation and advice an act of incorporation was prepared and filed; a copy of which is herewith submitted.

It was found that no one but a legal resident of the District of Columbia could file a charter, so Dr. Wms. Donnally's name was substituted by authority of the officers of the association instead of that of the full committee.

This association and the incorporators have been severely criticized for this act as of supposed aggression or interference with the prerogatories of the National Association of Faculties and of state boards.

Your committee disclaim any wish or thought of interference or control of the acts of any state board; the charter neither gives nor confers power over any state board or institution.

The charter is for protection, not aggression, so that this association may have a legal status.

The charter is a copy of the constitution under which the association has worked for years, and has received the approval of prominent men of the profession for the past ten or a dozen years.

Most of the adverse criticism of the objects of the charter has come from ignorance and prejudice which a full understanding of the case will be likely to dispel. H. B. NOBLE, Chairman.

Dr. Donnally: I suggest a slight amendment. Whatever was done, although it was done by the use of one name, was done by the authority of this association, and not by the volunteer action of this committee. After the substitution of one name is spoken of I would suggest that there be added "by and with the consent of the officers," or "by the authority of the officers of the association."

The President: Either way would be right and the suggestion is a good one. I was ready to sanction anything the committee did in the matter as satisfactory. They understood their business, and knew what the association required and what they intended to do.

Mr. Donnally: After the committee was appointed the question was raised whether a non-resident could take a charter, or his name could appear in it; it was discussed, and it was said that this committee should go ahead and do what was proper.

The President: Can an individual, not a resident of the state, join with any other individual and incorporate any body legally?

Dr. Noble: They can, if they take legal steps to join with them, and that is a question probably for this body. Dr. Faught will recollect on this very word "elect" or "elected," we had correspondence and the attorneys said that "elect" was placed there in our act of incorporation for a specific purpose. It says here, "This association consists of the undersigned and such different boards of dental examiners of the several states and territories and of the District of Columbia as may elect to join it." Now the question comes up at once whether they had elected to join. By intimation they did, when they appointed the committee of this body to get this charter. I do not know whether that would stand legally; they certainly gave us the authority and intimated that that was what they wanted done, and that far elected to join.

The President: Now let me interrupt. Would it not be necessary, or would it be necessary for this body to now sanction what has been done? Would not that be right?

Dr. Noble: Precisely. I supposed that this report of the committee needs the sanction of this body. We acted just as far as we thought we had any authority. And here is something that would come in right here:

"October 20th, 1896.—A meeting of the incorporators of the National Board of Dental Examiners, held this day at the National University rooms, elected to its membership all state boards of dental examiners having membership in the National Board of Dental Examiners, and adopted the constitution and by-laws of said National Board of Dental Examiners. On motion of Dr. M. F. Findley, Dr. J. T. Abbott, of Manchester, Iowa, was elected president; Dr. H. S Noble, of Washington, D. C., vice-president, and Dr. Charles A. Meeker, of Newark, N. J., secretary and treasurer for the year ending August 5, 1897."

Dr. Meeker: In furtherance of that, here is a paper which I think would make the association legal throughout the United States. These proceedings were incorporated in our printed proceedings, which were sent throughout the country, and the various state boards have all subscribed to it. I can read off the states that have subscribed to this act of incorporation. This was done by legal advice, and in order to make it legal I sent this throughout the country, and I have here the states, signed by the president and the secretary of the board, and the names of the board of examiners who subscribed in the capacity of their boards to these articles of incorporation: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Georgia, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Nebraska, New Jersey, New Hampshire, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Utah, Vermont, Washington state, West Virginia. There were five districts there; one of the districts has signed; also Wisconsin.

The only ones I remember that absolutely refused to sign were the states of New York and Illinois. I sent four different communications to Illinois, to Dr. Harlan, and I changed the address each time, to the secretary and members of the board, and they all sent them back, but without the signature of the president and the secretary. I hear that Illinois has a new board now and that Dr. Harlan is out. I had considerable correspondence with New York and they absolutely refused to sign; said they did not have anything to do with it, were not members of the board. Dr. Carr came down to Asbury Park and joined the association, with the consent of the board. At the Brooklyn meeting this year they had a controversy and one of the members of the board said that Dr. Carr was not authorized to sign; that he did it on his own responsibility; that they were not members and could not be members on account of their dental law. But the majority of the states are members of our association.

Dr. Meeker: I have the following communication from California:

California State Board of Dental Examiners, Secretary's Office, Benecia.
Dr. C. A. Meeker, Secretary National Board of Dental Examiners:

Below you will find a resolution adopted at a meeting of the California State Board of Dental Examiners held Saturday, May 8, 1897.

Respectfully yours, W. A. Moore, Secretary.

Whereas, the California State Board of Dental Examiners was created by the legislature of this state by statute entitled "An Act to insure the better education of practitioners of dental surgery and to regulate the practice of dentistry in the state of California," approved March 12, 1885, and

Whereas, the duties and powers of said Board of Dental Examiners are expressly and unequivocally defined by said statute, and

Whereas, said statute makes this board the sole judge of qualification of candidates for examination and license to practice in this state, and also to determine which dental colleges are reputable and to specify those which it considers to be disreputable and therefore cannot delegate such power to any other board or body in this state or other states, and

Whereas, this State Board of Dental Examiners is responsible for its acts to the people of the state of California only, and not to any other state or territory, and therefore cannot, by virtue of said statute, lawfully delegate or compromise its powers and duties to organizations outside of this state, neither does said statute authorize, permit or suggest any interference, affiliation, alliance, treaty or obligation with or to the management or decision of any other state or territorial board of dental examiners; neither does said statute counsel or recommend any like interference, alliance, treaty or obligation of other state and territorial boards in the management and decisions of said California State Board of Dental Examiners, and

Whereas, this State Board of Dental Examiners has hitherto affiliated with an association known as the National Board of Dental Examiners as a member thereof, and

Whereas, said National Board of Dental Examiners exists without authority of law and as such is unrecognized as an official body by this state or the United States, and

Whereas, such membership of the California State Board of Dental Examiners in the National Board of Dental Examiners has been called in question by the courts of this state to the great detriment of the California State Board of Dental Examiners, be it

Resolved, That after due counsel in the premises herein named it is the opinion of the California State Board of Dental Examiners that its connection with the National Board of Dental Examiners, as a member thereof, is unlawful and in excess of the powers conferred on said California State Board by said statute, and therefore this board hereby withdraws its membership from said National Board of Dental Examiners, together with all affiliations, alliance, treaty, compact and compromise of which such membership is expressed or implied by the rules and regulations of said National Board of Dental Examiners.

Resolved, That the secretary of this state board be directed to forward a copy of these resolutions and the reasons set forth for the same to the National Board of Dental Examiners.

Dr. Meeker: I would like to say that before I received this communication I was in receipt of a letter from the California State Board, stating that they wanted to come back into membership.

Dr. Chappell: I never could understand why our friends in California did this. Their laws are but very little different from ours and, as I understand, we meet for mutual counsel; we meet to have the representatives from different boards throughout the country talk with us. If that is the case, we have not the power to go to a state and inquire into whether any college has been properly organized. We leave that to the state boards who have the opportunity to inquire into the matter and report here. That is my understanding of the national board. As I say, our laws are similar to those of California, but in Indiana we are glad and proud to know that we are members of the national board. As we sometimes say, when a member of the church gets a little bit wrong, it is a very seasonable time to hold a prayer service with him. I think they will regret what they have done.

Dr. Noble: I think that the California State Board has a slight misunderstanding of the charter. That charter, as I stated in my report, does not give us any authority. They state in their communication that it is without authority of law, but I state most positively that we do have authority, now that we are chartered, and we would be recognized. When we got this charter I had it in my mind that some college, situated in some state, might have a grievance, and they might come to the officers here, and sue them personally for damages. I have been right in that situation myself. We reported to the commissioners of the District of Columbia that we did not think a certain college there was reputable and we would not accept its diplomas. The members of the board were each sued for $50,000 damages, and we had to employ a lawyer and defend the case. I believe they say that this would not stand and has not proper authority. If there should be such a college in California, and it came to a suit, they would find that we did have a status in these United States; that is exactly what we do have. They misstate it when they say that we have no authority of law or status.

Dr. Donnally: I just want to say one word there. Some people have taken a notion, or it has been beaten into their heads by someone who is adverse to the interests of this association, that the incorporation of this body is an attempt to give it legal power over the state boards—an effort to create a power higher than the state boards. That is a misconception and altogether at variance with the truth of the matter. The whole thing might be simmered down to this, that we attempt nothing in the world but the exercise of a little influence by recommendations, and by every means we seek to reach an ideal, or to say what ought to be, by obtaining the wisdom and experience of the different boards, and, after counsel, deciding what is best and what ought to be the best method of doing the work of the different boards of the different states. But as to exercising control, we have never attempted that. We do not propose to go into the district of Columbia, or to California, or anywhere else, and say that we will ignore the plain letter of the law. We simply say what we think is the best way to accomplish the aim and objects of the best dental laws, and to do it through moral influence only. We do not claim any legal authority over state boards.

The President: Dr. Meeker, would it not be well to take a vote, so as to make ourselves an incorporated body? That matter was laid aside; would it not be well to take it up?

Dr. Meeker: Yes, I think so.

It was moved and seconded that the report of the committee on incorporation be adopted and confirmed. A vote was taken and the motion carried unanimously, and the committee discharged with the thanks of the association for the good work which they had done.

Dr. Adams: Mr. President, there are some gentlemen here constituting, I believe, a committee from the National Association of Dental Faculties, who would like to be heard.

The President: We would have no objection.

Dr. Henry Morgan, of the National Association of Dental Faculties: We have no desire to interrupt your meeting, but we have a communication we desire to present, and ask for immediate action upon the same.

Secretary Meeker read the said communication as follows:

Old Point Comfort, Va., July 21, 1897.

To the National Association of Dental Examiners.

Gentlemen:—At the regular meeting of the National Association of Dental Faculties, this day, the following resolution was unanimously adopted:

Whereas, at the request of the president of this association, the executive committee has considered the fact that differences of opinion exist between this association and the National Board of Dental Examiners, therefore be it

Resolved, That as the result of this consideration, the executive committee recommend the appointment of five members of this association as a committee of conference to meet a similar committee of the National Association of Dental Examiners to consider the mutual interests of the two associations, and that the board of examiners be informed of this action.

J. Taft, T. Fillebrown, B. Holly Smith, Executive Committee.

In accordance with the above resolution, the president appointed Drs. H. W. Morgan, M. W. Foster, Theo. Menges, C. N. Pierce and H. A. Smith.

LOUIS OTTOFY, Secretary.

Dr. Donnally: I move that the communication be received, the recommendation contained therein to be carried out, and committee appointed. Seconded and carried.

Dr. Henry Morgan: As chairman of the committee of the National Association of Faculties I desire to say that as soon as your committee is appointed, if you will notify us, we will meet you at any time that may be convenient.

(Dr. Morgan and the committee from the National Association of Faculties then withdrew.)

Dr. Clements: Are we to consider the resignation of the California Board as their final action? From what the secretary said I understood some members of the association had expressed a willingness to withdraw it, and if they have expressed a desire to return to the fold we could defer action on the matter and hear from them later; but if that is their final act we must accept their resignation.

Dr. Edwards: As I understand, we have their resignation presented, and we learn also that they desire to withdraw it. We must either accept the resignation or defer its consideration. I would move that it be deferred and we do not accept it. Have we accepted their resignation?

Dr. Meeker: We have not yet; it has not been acted upon.

Dr. Edwards: Do I understand that they have expressed a willingness to withdraw it?

Dr. Meeker: No; I said that just a short time before I received this communication I received a letter from them, coming back into the association and sending a check for their dues, and right afterwards I received this communication.

Dr. Moore: I do not think we have any right to do anything but accept it.

Dr. Donnally: I think if this matter is managed judiciously and wisely the California Board will come back, which is the desire of every man who wants to see the objects of this association carried out, and I think a little parley would be well; that we should take the pains to explain to them wherein they misapprehend the condition of things. I think if a friendly letter were written them in a good spirit they would try to come back in the fold. The same thing possibly would apply to other states, but I do not like to see a board go out with a statement that we cannot accept as true. or perhaps I should say, an interpretation of a condition that we do not recognize as a correct interpretation and I would not be willing, so far as I am concerned, to see this association accept the California Board's resignation and say nothing. We must, in defense of our position, and in defense of the fact, show them wherein they are in error, and in a kindly friendly way insist that they shall come in with us and continue with us, as we desire their advice and experience, and all that sort of thing.

Dr. Chappell: I think it would be proper if we referred this matter to a committee to report next year. It would be proper to refer it to the Executive Committee, if we have one, to consider the matter during the interim, and report next year. By that means there will be an opportunity for the California Board to withdraw their resignation.

Dr. Donnally: Suppose we table it for the present and bring it up later.

Dr. Meeker: I believe as Dr. Chappell does, that the reading of the articles that will appear in the magazines now, together with this resolution, which I have just read, from the Association of Dental Faculties, will make some difference in the feeling of California towards this association, because

I believe in my mind that from this year on this association will be advanced and all the states will wish to be in.

Dr. Chappell: You remember in 1881-2 we had the same trouble.

Dr. Meeker: Yes; I believe they will want to come back.

Dr. Chappell: Then I think that communication ought to be referred to a committee. We wish to act conservatively; at the same time, when it is done, it should be done completely.

Dr. Thompson: As I understand this action of California it was not taken as a voluntary act of the examining board, but by direction of their supreme court. It seems that some gentleman came before them for the endorsement of his certificate or diploma, he being from an unrecognized college. In the meantime he graduated from some other institution that was not considered reputable, or recognized, and then went to a college that is on the recognized list, and they took him on a one year's course. In other words, they considered this unrecognized school as being equal to two years' instruction and gave him a diploma. The board examined him and refused to give him a certificate of qualifications, as I said, and they then refused to endorse this diploma without examination. The college being on the reputable list, action was brought in the lower court against them, and that court directed them to endorse the diploma. They appealed to the supreme court and the decision was there reversed, and the supreme court said the state board was the proper authority for stating what colleges should be recognized and reputable and what not, and advised them to withdraw from this association on that account.

Dr. Edwards: I think that every intelligent member of this association, and the members of the state boards, understand that the national association is purely an instructive body. Of course, as has been intimated before by the article read by the secretary, they cannot enforce any of their laws or rules in individual states. California and all other state boards recognize this association as the advisory and instructive board to give to the state board the qualifications of different colleges, and it is important for the boards to get that. It is through all the boards furnishing information to this body, as to the colleges in their districts, and I think there must be some politics in any state that would come to a decision that it was not advisable for their state board to join our association. I think we will all admit that this is purely an advisory and instructive board.

Dr. Meeker: I second Dr. Donnally's motion that it be laid on the table at present. There is no necessity of passing on it right away.

Dr. Donnally: I did not make that as a motion. I suggested the idea. But in order to bring things to a head I do make that motion, with the view of taking it up after a more complete organization. I think that before we get through with our work here we will be a more compact and better organized body, and will have our work systemized to such an extent that we will know where to put such a thing as that when it arises.

The president announced the following committee to confer with the committee of the National Association of Dental Faculties:

Dr. Wms. Donnally, Dr. G. E. Adams, Dr. George L. Parmele, Dr. C. G. Edwards and Dr. M. H. Chappell.

The President: As your chairman I have penned a few words as president. I do not claim it is a president's address, but a few words for your consideration. Shall I read them to you now, gentlemen?

Several voices: Yes, read them; read them.

Dr. Noble: Do you intend to send a copy of the action of this body to the National Association of Dental Faculties as to the appointment of our committee? They notified us officially.

The President: Perhaps it is hardly necessary; I told the chairman of the committee which I appointed to notify them when, where, etc.

Dr. Noble: I am inclined to think that it is always better to be overcourteous than otherwise. I think we had better notify them that we have appointed a committee and send them an official notice, so that they shall have it on record.

Dr. Meeker: I should do that without any motion.

Dr. Edwards: The chairman of the committee asked us to notify him individually, but our action was taken in his presence.

The President: Well, I will put the motion. It is moved and seconded that the secretary communicate with and notify them what action has been taken. Carried.

The President: With your permission I will bother you a little while. The president then read his address as follows:

PRESIDENT'S ADDRESS, BY DR. J. T. ABBOTT.

Another year has gone to join the innumerable, and we are once more permitted to greet friends and form new acquaintances. Change is the common lot of all, of everything. We all in the past year have had our peculiar experiences and individual changes. Rest is impossible, but I trust that we have assembled for the furtherance of the primary object of organization of this body viz, education. If it is not for that purpose, and if it has lost sight of that purpose, or ever shall lose sight of it, then it never has had any object and exists now only in name.

But in reviewing its acts, its efforts towards advancement to higher grounds, I believe much good has been accomplished and more is to follow. One very cheering aspect is the general assistance given by nearly all educators in dental educational departments, and this is as it should be. This organization has no personal schemes to put forth or hindrances to place in the path of advanced education.

One object it would like to see obtained—uniformity of education in different schools so far as may be obtained, that results might be interchangeable. In furtherance of this as well as other objects, the committee on colleges has been insistent in procuring information from all the dental colleges in the country; and to their credit be it said, the answers to questions have been almost uniformly courteous, kind and helpful. The object in all schools to be obtained is the same. Differences of opinion as to modes will necessarily arise, jealousies may exist in minds cramped and dwarfed, or even honestly overlooked individuals may let environment sway their better judgment, but the masses are eventually sure to be right and do right, and results will be all the most chronic kickers could have desired.

It is a fact patent to all that this organization has been the means of awakening many of the schools to a realization of their want in some directions, and said schools have been prompt to adopt measures that have resulted in placing them on a higher educational basis. We do not claim that we *alone* have been responsible for the good results. State, local and national societies have all been at work in the same direction, and the faculties have been most urgent in this direction; yet one great stimulus, one prominent, potent factor in this direction has been the persistent activity of the National Association of Dental Examiners.

And now, gentlemen, do we not see clearly before us our duty? Results should only stimulate us to renewed activity, continuing further the good and correcting any mistakes we may have made. All such organizations out of which we grew are comparatively of recent date, and in one sense experimental. We are not infallible, and court *honest*, helpful criticism from all who are interested and have the knowledge preparatory to criticism. I would ask all, and it is no informal request, whether members with us or interested members of other organizations, to "Come, let us reason together," that the results of accumulated experience may be a basis of future action.

At our last meeting a committee was appointed for the purpose of incorporating "The National Association of Dental Examiners." Said committee has accomplished the same and Chairman H. B. Noble will make report of same. It has been said that aggrieved parties could not obtain redress—for imaginary wrongs—because this body was not incorporated. I trust said parties may now be relieved.

At our last session at Saratoga a committee was also appointed to codify "Rules and Conditions for the Obtaining and Maintaining Recognition of Dental Colleges by the National Association of Dental Examiners." Said committee made a report to this body, which report was unanimously adopted and generally commended by the faculties of colleges. Some, however, have seen fit to take exceptions to your action, and one has facetiously termed us "Beggars on Horseback." Honest criticism should always be courted. The position he occupies would lead you to expect courteous treatment, at least. I think, however, the reply by the chairman of the committee on colleges can be warmly seconded by this association.

This body is seeking no personal renown. We are a delegated body with delegated powers. Our constituents can modify, approve or disapprove our acts. The aim is to assist along educational lines. If we advance too fast, a halt can be called for the loiterers to come up.

I would suggest the propriety of a permanent joint committee (appointed or elected) of the National Association of Dental Examiners and National Association of College Faculties, to which can be referred all subjects or questions vital to both organizations. The National Association of Dental Examiners after almost exhaustive examinations have assumed the power of pronouncing upon the standing of the dental colleges, and the large majority of state boards acknowledge their standard. The results of this course has proved satisfactory and successful. The committee on colleges have obtained information through the deans and secretaries which enables you to act understandingly, so that no unworthy school may obtain recognition and justice may be meted out to the worthy.

The above power should of necessity be delegated to some body, some responsible organization. If left to each state, instead of uniformity we should drift farther and farther apart. The original thirteen states, acting upon this principle, formed a union for the safer and better government of the whole. Experience in many directions, not necessary even to point them out, has proved the wisdom of such action. "In union there is strength." If this body is not sufficient for the demands, then it should be made so, or dissolved and some body organized that is sufficient. But this organization, delegated from those state bodies who have the power, seems to me to contain all the essential elements necessary to act for the whole.

And now, gentlemen, believing this body fully competent to act for the whole understandingly and having the power to act, we should grasp all questions which may come before us with a determination to act for the best interests of the whole, and act fearlessly but with judgment. Probably questions of vital importance will come before us during this meeting.

The California State Board of Dental Examiners has seen fit to notify this body of their withdrawal. We have had experiences of withdrawal of states from the union compact. The results were not altogether satisfactory. This compact, however, is not bound by any written code or written acknowledgment of parties thereto. If my memory serves me right, it took years for one of the thirteen original states to acknowledge the constitution.

I am clearly of the opinion that all differences will be adjusted on lines satisfactory to all parties. We come cogether with this object in view and towards this end we must work. Last year I took the liberty to suggest some improvements. Allow me to call your attention to the same in so far as they have not been consummated.

Gentlemen, I thank you for your kind consideration shown me in the past, and with your forbearance will try to merit a continuance of the same.

Dr. Chappell: I move that a vote of thanks be tendered to our president for his address.

Vice-President Noble put the above motion, which had been seconded by several members, and the same was carried unanimously by a rising vote.

The President: Thank you all, gentlemen.

On motion a recess was taken until 3 o'clock p. m.

AFTERNOON SESSION, JULY 30.

President Abbott called the meeting to order. Secretary Meeker called the roll and read the minutes of the morning meeting, which were approved as read.

The President: Dr. Donnally, has your committee been in session with the committee from the faculties?

Dr. Donnally: No, sir, we have had a little conference among ourselves. We wanted a little more information and a little better understanding among ourselves before we held the meeting. If possible we should like to have a report of the committee on colleges before we meet.

The President: I was going to suggest that we had better hear the report of the committee on colleges while you are present. But first I will state that I have a communication here which I will ask the secretary to read.

Secretary Meeker then read the resignation of Dr. L. Ashley Faught as chairman of the committee on colleges, the resignation being as follows:

Philadelphia, July 29, 1897.

Dr. J. T. Abbott, President N. A. D. E.

Dear Doctor: Inasmuch as my membership in the Pennsylvania State Board of Dental Examiners expired at its last session, held this month, I hereby tender to you my resignation as chairman of the committee on colleges of this N. A. D. E. Sincerely yours, L. ASHLEY FAUGHT.

The President: That resignation will take effect at the close of this meeting if accepted. What action will you take at present.

Dr. Donnally: The gentleman no doubt has a great deal of data and has gained much information during the year, and I suppose that he will at least favor us with the substance of what he has done, even if he cannot give us a full and detailed report.

Dr. Faught: My resignation, as you will see, is dated yesterday. It was my full intention, before coming here, to present it. The point is perfectly plain—that a man who is not a full member of his board, while undoubtedly a member of this association, cannot continue to act in an official capacity, and I think it is perfectly proper for me to tender this resignation at this time. Of course you can fix your own time at which it shall take effect; I am here to render you all the service possible.

It was moved, seconded and carried that the resignation of Dr. Faught be laid on the table pending the reading of the report of the committee on colleges.

Dr. Faught: I will say before beginning to read this report, that there are copies here of the various documents that have been in use during the year, especially the rules. I thought the members might possibly like to have some of them in their possession during the reading of the report, so I brought some for that purpose.

Dr. Faught then presented the following report from the committee on colleges.

REPORT OF THE COMMITTEE ON COLLEGES.

Mr. President and Gentlemen:

The committee on colleges would respectfully submit the following report:

The year 1897 has been one in which the work of this office has become thoroughly systemitized and placed upon a good working basis. Files have been established for the preservation of the documents relating to the various schools, the numbers upon each corresponding to the number upon the catalogue of the school. Correspondence has been thoroughly established with all the schools and with the representatives of the various state boards. We have thus during the year been in thorough touch with those representing the dental educational interests throughout the United States. Our information, therefore, is of the most practical and tangible character and has enabled us to do our work with confidence and to place the association in possession of a fund of knowledge not only for use in the future but also to be used retrospectively, with a surety of finding what have been our past actions and decisions.

Your committee on colleges has issued in printed form "Rules and Conditions for Obtaining and Maintaining Recognition of Dental Golleges," as codified by this body last year, and has sent copies to all the colleges and to various state boards, so that they might be officially informed thereof.

In accordance with rule 1, proper blanks for making application were prepared and issued. These blanks have been found to be of immense value, for certified to as they are by the dean of the college making the application, and also by a representative of the board of the state within whose territory the college is located, after due examination of the correctness of the matter in them, we are thus furnished with positive data, not only upon which to make decisions as to the status of any institution in question, but also to remain as constant evidence of that upon which such action was based.

Your committee has also issued a printed list of the recognized colleges. In accordance with rule 4, we sent out a proper blank for the annual report of each state board to this association. In the practical application of the rules and conditions we early found the necessity of making the following decisions, and would take this opportunity of suggesting further necessary changes.

Regarding rule 1, owing to somewhat tautological and obscure wording, it was necessary in many instances to formally state that the requirement to fill out and return the blank applied only to colleges not now on the list of those recognized—that is, to those not on it prior to January 1, 1897. We would suggest that rule 1 should now be changed to read as follows, as more definitely in harmony with the purposes of our association:

RULES AND CONDITIONS.

Rule 1. Colleges desiring recognition by the National Association of Dental Examiners shall make application for such recognition through the committee on colleges on blanks provided for that purpose.

Your committee found it necessary in issuing a copy of rules to the colleges to make a total suspension of rule 2, for the reason that we found it difficult to determine how "the prominent local educators were to be remunerated." In making this suspension, however, we invited the faculties of the various colleges to communicate to us their ideas as to the practicability of enforcing this rule, and have received in reply many very interesting communications, the consensus of which is an opinion that while our rule was a good one, and if it were possible to enforce the same would materially tend to elevate the standard of the profession, and that while a great many of the institutions agree to its requirements, a still larger number seem to feel the impossibility of its enforcement at the present time. As these opinions concur with the one previously formed by your committee, we now recommend that this rule, as codified at Saratoga, be stricken out and the following substituted: Rule 2. The preliminary requirements prescribed by the National Association of Dental Faculties shall be the standard accepted and required by the National Association of Dental Examiners.

As previously stated in this report, rule 3 has stood a test of usefulness and we therefore recommend its continuance, viz: Rule 3. The statements set forth in the application of any college for recognition shall be verified, after investigation, by the board of dental examiners of the state in which the college is located, or by other persons designated by the National Association of Dental Examiners, in case no such state board exists, and the recommendation of such board shall be essential to recognition.

As we find no occasion for the last clause in rule 4, and as we believe the National Association of Dental Examiners capable of dealing with the contingency therein provided for, without stating specifically our action in advance, we recommend that rule 4 be amended so as to read as follows:

Rule 4. The state boards in connection with this association are hereby required to become informed of the character of the dental colleges located in their respective states, as to their equipment, facilities and methods of teaching, and shall report annually to this association wherein they fail to comply with these requirements.

As no reason exists to necessitate our association going back of the requirements of the laws of the different states, they being specific as to age requirement, we therefore recommend that rule 5 be amended by striking out the last clause so that it shall read as follows:

Rule 5. Attendance of students upon three full courses, of not less than six months duration each, in separate years, with three months' practical instruction intervening between the courses, shall be required before final examination for graduation.

Your committee has made the interpretation that this rule was complied with as touching the three months' practical instruction between courses, when colleges were able to certify to it—that is, when the instructors actually knew that the students took this time with their preceptors, or afforded them this amount of care and attention during the interval at the college building. Your committee also interpreted that "six months duration each" meant calendar months—lectures from October 1 to April 1.

We also found it necessary to early suspend rule 6 for the reason that the committee on colleges believes that recognition should be based, not upon the number of professors composing a faculty, but upon the efficiency of the methods of instruction, maintaining however, that there is a minimum number of professors below which efficiency must necessarily fail, and suggests that number be six. Your committee also interpreted that it is arbitrary to insist upon a division into four dental and six medical subjects, to be covered arbitrarily by three dental and five medical professors—believing the subjects as a rule may be covered either by dental or medical professors, as may make more convenient combinations to any college in question. We interpreted, however, that the ten subjects as specified should be covered. We therefore recommend that rule 6 be amended so as to read—

Rule 6. Each dental college to be on the list of recognized colleges should have a teaching faculty composed of at least six individuals, and teach the following branches: Operative dentistry, dental prosthetics, dental pathology and oral surgery; also the six branches of anatomy, physiology, chemistry, general pathology (fundamentals), materia medica and therapeutics and general surgery. Their students must also be taught the subjects of chemistry and bacteriology in laboratories adapted to the purpose and under suitable instructors. That such special college must possess in addition to suitable lecture rooms, a well-appointed dental infirmary and a general prosthetic laboratory, also each college must be provided with facilities suitable for manual training in operative dentistry, and must furnish in this way systematic instruction to its students.

Your committee would recommend the striking out *in toto* of the rules numbered 7, 8 and 9; and would further suggest that rule 10 be now made rule 7.

Rule 7. These rules and conditions shall apply to all colleges, including those now on the recognized list, as well as to those making application for such recognition.

We would report that we have had the most hearty cooperation of the various state boards in the conduct of our work, and the most overwhelming evidence of the value of the National Association of Dental Examiners to the individual boards. Numberless have been the times that information concerning the colleges has been sought at our hands; and promptly, correctly and confidently have we found ourselves able to supply the desired information. Standing as your committee does in daily communication with every state in the union through the double touch with colleges and boards, it becomes a great gatherer of up-to-date information, which it can freely place at any instant at the disposal of any board. Indeed, so large has become the clerical work of your committee that its chairman frankly confesses that he would have been unable to maintain efficiency of service were it not that he has been fortunate enough to possess the assistance of a trained secretary, who having become conversant with the detail of the work has afforded the greatest advantage in bearing the burden.

The reports from the various state boards, on the blanks furnished according to rule 4, are in the hands of your committee, and will as they come in from year to year constitute a valuable file of more than hearsay information. Especial mention and acknowledgment is here to be made to the state boards of Illinois and Kansas for the material assistance they have given your committee regarding Missouri, which was assigned to them by reason of that state not having at that time a board of dental examiners.

The question has arisen as to state boards registering applicants holding diplomas issued by a school prior to being placed in the recognized list of this association; and the concurrent question as to whether a diploma, issued by a college before it was recognized by this association, entitled the holder to an examination before a state board which accepted the list of the national association as the official list of its state. In reply to this question, your committee realizing that graduates from colleges other than those on the recognized list could not be examined by the boards who use the national list as the standard of their states, nor could they be registered in states where the same list was the accepted standard, have stated that each state board must settle the question for itself and in accordance with its state laws. It being however manifestly improper for a state board, which has in the past accepted the list of the national association as the official list of its state, to examine the holder of a diploma issued by a college before it was recognized by the national association or to grant him registration. We would now, however, suggest as the proper solution of both problems that the date of recognition of any institution be placed on the list issued by this association; and that the question of the eligibility of the candidate for registration or for examination be left for each state board to determine for itself.

The National Association of Dental Examiners has during the last year, and particularly during the last few months, through the medium of two editorials written by college professors, been stigmatized as assuming and making "an unwarrantable and impertinent interference with the chartered rights and functions of dental educational institutions." This charge can have no other basis than the fact that this association has shown a strong desire to cause a high preliminary standard of education to become an established essential to a collegiate course of study in dentistry. History repeats itself. The early practitioners of dentistry, feeling the need of broad professional culture, made overtures to those whose chartered rights invested them with authority to give it. The little band was then insultingly spurned from the doors of medical colleges. They accepted the issue forced upon them by those who thus failed to appreciate their duty—literature, colleges, a degree and a profession was the result. Then, and only then, did medical men want it understood that dentistry was a specialty in medicine. In exactly the same way has the question of preliminary education become an issue forced upon the boards of examiners. They have watched for years the pretense upon the part of some colleges to require a high standard for entrance from the men coming to the college doors; and yet when the finished product of these institutions has been handed over to us we have felt that these standards in too many instances existed only on paper.

We have protested without avail, and at last have felt that the salvation of the profession demanded that something be done, and we have with reluctance taken up the issue forced upon us.

We believe the question of a high preliminary standard to be the paramount issue of the day. We see it steadily advancing in other educational institutions, and we believe that in dentistry it must become the established fact of the future.

One of the most prominent reasons for the establishment of state laws in dentistry is the protection of the profession, yet we cannot fail to recognize that these very laws have proven two-edged, and in a measure become the protection of a class of practitioners which they were expected to exclude. The man of low education, lacking the polish and sentiment of a highly educated gentleman, lured by the supposed large emoluments of comparatively easy attainment, enters a college, secures his degree, passes a state board, acquires his license, and enters upon practice on a plane in keeping with his original educational development, and having the same license hung in his office as that exhibited by his brother of more extended culture and professional honor A public discriminating only on the basis of cost gives to this quackery a successful patronage, and thus aids these men in lowering and degrading the professional status. A high preliminary education starts those only on a professional career who have that polish which is extremely unlikely to eventuate in anything but a high character of professional practice. The claim that the requirement of a high preliminary standard of education will work hardship by debarring many deserving young men is to be met by the fact of experience that anyone really possessing the true metal necessary to practice dentistry will always develop the true grit necessary to acquire the preliminary essential.

We consider the keynote to the present situation and the real object of this association to be the establishment of a correct list of colleges who educate up to the standard demanded by the needs of the profession. The list to be used by the various state boards as a guide in their local work. The idea of each state being able to compile a correct list of such colleges is too absurd for discussion. The illegality of this association doing that work for its component parts is also too far-fetched for consideration. Of course the right of any state board to accept or to reject the list lies entirely with itself, as does also membership in this organization. Those of us, however, who know and realize these features and who are willing to abide by the rules of this organization, recognize that our strength as an organization is to be limited only by the degree of unity with which state boards stand together.

L. Ashley Faught, Chairman.
G. Carleton Brown.

The President: This report is before you. What action will you take?

On motion the report was accepted.

Dr. Parmele: Do I understand that is the full report?

Dr. Faught: No, we have a specific report concerning colleges, which will come in later.

Dr. Chappell: It will be necessary to have a motion made to refer that report to a committee on codification.

Dr. Parmele: I understand we have not adopted the report but only accepted it.

The President: You have only accepted it; it is in your hands for action. I suggest that a committee be appointed for making a division of the report and considering what action we will take after understanding it thoroughly. Rule 1, 2, 4, 6, 8, 9 and 10 should be acted upon, if I am correct in my recollection. Perhaps one committee would not have time to cover all of them in their various phases.

Dr. Chappell: There are some very important matters in the report, which it seems to me should go to the committee on conference; something that will modify the feelings of our brothers wonderfully. I think the committee should have access to that report after it has passed the committee of revision, or that the committee on colleges be requested or required to present those resolutions in proper shape so that we can adopt them before we have final action by the conference committee.

Dr. Moore: I think these are very important modifications, and so far as they have been read I see nothing but what I would support; at the same time I think this association should look over the matter carefully. We ought to get at these and put them in shape as soon as possible, for I do think they would have the effect of very largely modifying the faculties committee in their action.

Dr. Meeker: I move that we take up rule 1 and go right along with them as a committee of the whole.

Dr. Edwards: Yes, I was about to make that suggestion, that they be read now and passed upon. I second the motion.

Dr. Donnally: I think the best immediate use that could be made of this report is suggested by Dr. Chappell, that it should go to the committee on conference, and that we could use it or so much of it as we think would be of service in meeting the alleged differences between the Association of Faculties and ourselves.

The President: There was a motion made and seconded that the different recommendations be taken up and passed upon at once.

Dr. Donnally: It seems to me that before any final action is taken, or any codification had, we should have a report from the committee on conference. There are some matters we might get in good shape. I think we may have concessions greater than the chairman of the committee on colleges asks for. For instance, one of the suggestions applies to colleges, and I think that six professors are not enough, and that no college should be organized or conducted with less than seven. There are possibly one or two other points that we could recommend to them which might avoid an interference with the vested rights of colleges, and for that reason I would oppose a motion to take up the matter now and dispose of it finally, but prefer to see the association turn it over for the use of this committee for the present, and make it the special order of business for 10 o'clock to-morrow.

Dr. Moore: At present it is merely a matter of report; the association does not know if we are going to adopt the recommendations or not. If the committee on conference takes those recommendations with the approval of this meeting, they may then come back and we could make some modifications if they asked for them. It seems to me the proper course is to go over this now, so that the committee on conference can have the backing of this association as to these modifications.

Dr. Chappell: My idea of referring this to a committee was, that while such committee was at work we could have a conference with the faculties committee and refer whatever disturbing element we find to our association, and have it referred to a committee. But we ought to have some further information and get together before we act on the report of the committee on colleges.

Dr. King: It seems to me these modifications should be taken up so that we can present our views on the subject, and I think the report should remain the property of this board before any committee takes hold of it.

Dr. Brown: I do not see how any committee is going to take charge of the work in that way. We are here to do this work; let us get these recommendations in shape and turn them over to the conference committee so that they will have something to work on. That committee cannot go to the other association now and use them, because at present they are only under consideration. No one has even expressed an opinion as being in harmony with any of the propositions.

The motion of Dr. Meeker that the meeting take up the recommendations of the committee on colleges, as a committee of the whole, was then put by the president and carried.

The President: The chairman of the committee will please read recommendation No. 1.

Dr. Moore: Before that is done I want to make a report from the committee on credentials. H. W. Campbell, representing the Virginia State Board, has presented his credentials, which we have received, and he is present.

Dr. Faught: Before taking up the proposed new rule I will read the rule which was codified last year. It is as follows: 1. A formal application for recognition shall be made by January 1,1897, by each college now organized desiring such recognition: and colleges hereafter organized shall make such application within the three months next succeeding their organization. All such applications shall be made upon blanks to be obtained from the committee on colleges of this association, and shall answer in full all the questions contained in the same.

The modifications which we suggest are based upon the following facts: In the first place, there are some colleges in existence that have not made any application to us at all, and they have been a good deal longer than three months in existence now. What is the use of our making such a statement in the rule? We have no authority to exclude them simply because they do not take action, so that seems to be a very useless clause. Originally it was thought well to force the colleges to place themselves under our recognition or espionage so that we might know something about them, but many of them have not done it, and I do not think that portion of the old rule has any force whatever. We make ourselves ridiculous by asking something that we cannot positively require, and the suggestions which the committee on colleges have made are entirely on that idea—that we should not ask a thing which was not strictly within our province, so that we could then stand by our rule and have some foundation on which to build. So we suggest leaving out that clause regarding application within the next three months succeeding, etc. As we have amended it reads thus: "Rule 1. Colleges desiring recognition by the National Association of Dental Examiners shall make application for such recognition through the committee on colleges on blanks furnished for that purpose."

Dr. Donnally: Would it not be better to say "may make"?

Dr. Faught: In the experience of the last year or so, particularly during the last year, there has not been a college that has made application on its own paper as the old applications used to be—"we make application for recognition by the National Association of Dental Examiners," which was signed by the dean only. Not one of them has objected to asking for our blanks, accepting and filling them out fully. Where they have not done it correctly in the first place and we have returned it and suggested that it was not full and explicit, the college has done everything to make it so. If we use the words "may make" you take away from the committee on colleges the foundation on which to make its decision, provided the college should object or fail to fill out the blanks; we would have nothing then to act upon except hearsay evidence, which we have been charged with acting upon, but which we do not act upon, for we rely only on definite statements.

It was moved, seconded and carried that rule 1, as recommended by the committee on colleges, be adopted.

Dr. Faught: Rule 2 as codified last year is as follows: "2. The preliminary requirements prescribed by the National Association of Dental Faculties must be accepted and carried out in good faith by the colleges recognized by the National Association of Dental Examiners, provided that the standard adopted by the National Association of Dental Faculties at Saratoga in 1896 be not lowered. Where such *certificate*, as thus required, cannot be presented from state school authorities by the applicant for matriculation, his or her qualifications shall be tested by an examination. conducted according to this standard by prominent local educators, approved by a state board of dental examiners for that purpose. None of the persons thus conducting the preliminary examination shall be members of the faculty of the college to which the application has been made."

That is a pretty broad rule and we immediately found difficulty with it. We had not adjourned two hours before we began to get into trouble, and by the 1st of September our committee had decided we had better go very slowly on that rule, so that when the printed rules were issued, sometime during September, we "starred" that rule and put down at the bottom a note that, "this rule being a radical change, the committee on colleges does not intend to require it this year." In sending out the rules we wrote letters to all the deans in which we told them they would observe we had "starred" the rule, and wished to have their colleges express to us the opinion of their faculty as to the possibility of enforcing that rule. We received many letters and the majority of them were very much in favor of the rule, but believed in the impossibility of enforcing it at this time, and we could not understand how the "prominent educators" were in any way going to be re-enumerated. So we made the modification which we present to you as a suggestion of the committee. and it is as follows: "Rule 2. The preliminary requirements prescribed by the National Association of Dental Faculties shall be the standard accepted and required by the National Association of Dental Examiners."

Dr. Moore: I move the adoption of this rule.

Dr. Donnally: I understand that rule is not in force now. Is it?

Dr. Faught: I am very glad Dr. Donnally asked that question. I left that out of the original statement, because I did not wish to bring up so much at once, preferring to let you ask for information as you desired it. The fact is, we do not know what the standard is, which has been one thing that has paralyzed this committee in its work all through the year.

We have here the announcements of the colleges for 1897-8. One of them is as follows: "Notice is hereby given that these requirements, affecting those who wish to enter for the session of 1897-8, may be changed or modified by the action of the National Association of Dental Examiners in August, 1897, in which case the faculty of this college reserves the right to alter the following regulations without further notice. and the dean is not to be held accountable for any written communication before that date in case of any change."

(*To be continued.*)

News Summary.

Dr. J. L. Riggs, of Pawnee City, Neb., died August 4 with typhoid fever, after a two weeks' illness.

Any dentist will be benefited by sending for the new catalogue of the Mason Detachable Tooth Company.

Pumice Mixed with Soap.—To prevent pumice flying on one's dress while polishing, mix some soap in water until a foam is produced, then add the pumice to it, and dab the mixture on the denture which is being polished with a soft brush.—*W. H. Wilshire.*

DR. J. Y. CRAWFORD "did not care what name it had if they would only put American or United States in it to show to what country it belonged."

SOFT RUBBER FOR LINING DENTURES.—After trimming the rubber with a hot knife there is a certain amount of stickiness about it, which can be removed by rubbing over the rubber with a clean, soft rag dipped in paraffin oil.—*H. W. Moore.*

WHERE WAS HE?—The *Dental Review* says "It was hot as Hades during the meetings at Old Point." The generally expressed opinion was, that those in attendance were blessed with delightfully cool weather, and we would suggest that the author of the above remark must have struck only the hot places.

ACCIDENTS DURING THE MEETINGS.—Two accidents occurred, but happily neither one resulted seriously. Dr. James Truman, president of the American, pushed his chair, while sitting in it, off the platform. He was bruised and severely shaken up, but was able to preside over the meetings. Dr. J. J. Sarrazen, of New Orleans, was taken with cramps while in swimming. He was going down for the third time when Dr. T. C. Wilson, of Savannah, Ga., who was sitting on the hotel piazza, jumped in and rescued him. The Southern Dental Association passed resolutions commending Dr. Wilson.

SULPHATE OF SODIUM AS A HEMOSTATIC.—In the *Revue Medicale de la Suisse Romande* of January 20, 1897, Reverdin contributes an interesting article upon this subject, experimental and otherwise, and concludes that small doses of sulphate of sodium (two grains every hour) are of great value in certain cases of capillary hemorrhage for the purpose of arresting the flow of blood. He has also found this method of treatment of value for the control of graver hemorrhages. His experiments upon animals seem to show, however, that the remedy is of value only if given by the stomach or injected into the veins. Under these circumstances it distinctly increases the coagulability of the blood. On the other hand, it is a noteworthy fact that its administration subcutaneously does not produce the same result.

LEUCOCYTES AND THE BACTERICIDAL ACTION OF THE BLOOD.—Hahn (Arch. f. Hyg., vol. xxv, p. 105) has investigated the action of blood serum and also the pleural exudation of rabbits. The leucocytes in the latter are destroyed by freezing. He found that the exudate had a more powerful bactericidal action upon staphylococcus pyogenes aureus and bacillus typhosis than the blood serum or the defribinated blood of the same animal; and since the leucocytes were destroyed, the action cannot depend upon phagocytosis in Metchnikoff's sense of the term. The author made experiments with Lichenfeld's histin-blood, in which the leucocytes remained unaffected, in order to determine whether the bactericidal power depends upon the destruction of leucocytes or upon substances secreted by the leucocytes while still alive. He came to the conclusion that the latter is the more probable explanation.

FOR SALE.—A $3,500 dental practice, full dental outfit, and seven-room brick house, conveniently located in the most desirable residence district of the South Side, Chicago. Price $9,000 cash. Address A, in care of DENTAL DIGEST.

The Dental Digest.

Vol. III. CHICAGO, SEPTEMBER, 1897. No. 9.

Original Contributions.

THE STUDY OF ANATOMY.

BY W. C. BARRETT, M.D., D.D.S., M.D.S., BUFFALO, N.Y. READ BY REQUEST BEFORE THE NATIONAL ASSOCIATION OF DENTAL FACULTIES, OLD POINT COMFORT, JULY 31, 1897.

This association has wrought a great work in securing the adoption of something like uniformity of action in the admission of students, and in the raising of the general educational standard. If one would have some comprehension of its beneficent influence, he has but to reflect upon what was the general character of American schools, and what their reputation abroad before the organization of the National Association of Dental Faculties, as compared with the present condition. And yet it has done but a small proportion of its manifest duty. Its accomplishments have been elementary.

It is not too much to say that our professional reputation must be what our colleges make it. We are the educators of those who are to be the leaders in the professional matters of the future. The next generation of dentists will be what we shall make it. Legislators may pass laws to regulate and restrict dental practice, but the stream can rise no higher than the fountain-head, and the practitioner of to-morrow must get his training and derive his professional knowledge from the school to-day. He must enter the profession by submitting himself to our guidance. The colleges are the fountain-head, and the stream will be limpid or foul according to whether we purify or contaminate it.

This should be a proud position. It certainly is a responsible one, and woe betide the college professor who does not realize his accountability. The man who accepts the honor which may appertain to this distinguished station, without striving his utmost to be in every way worthy of it, to fulfill every duty with an eye single to the best interests of student and profession, is unworthy a place in our ranks. He who assumes to arm the young men of our country for the battle of life, to fit them and equip them for an honorable career simply that he may minister to his own good, who takes the teacher's place and ascends the instructor's rostrum from selfish motives, is a worse hypocrite than the preacher whose everyday life belies his own sermons.

I believe that we are all sincere in desiring to make our schools, and through them the profession, all that they should be. To secure this it is not enough that we look solely to the preliminary qualifications of those whom we accept as candidates for a confidential position in American families. We need to make our instruction as perfect as possible. This cannot be done unless there is a generally accepted standard, and some uniformity in system. At present one of our greatest sources of weakness lies in the fact that there is no common comprehension of a standard of methods. One school begins instruction with the alphabet, proceeds to the construction of simple words, and by regular gradations to the building up of sentences. Another commences by an analysis of the sentence into its component words, and then studies the elementary symbols constituting the words.

That is, one teacher is synthetical, and the other strictly analytical. A student takes his first and second year in one school, and then circumstances or inclination cause him to finish his course at another. He commences under analytical teachers and closes with a school that arrives at the stage of analysis only in the last year. Hence in reality that student never reaches the end of any regularly graded course. In this way the practical efficiency of that graduate can never be assured. Let me illustrate this by the various methods of arriving at a knowledge of that basal study in all schools that attempt to teach the healing art—anatomy.

Some teachers open their course with an examination of the elements of which the human body is composed. That is, they begin with histology. They commence with the cell, and after having given a fair knowledge of that, they proceed to construct the cells into tissues, which are then considered. Then the tissues are built into organs, and finally the organs into the systems which they compose, and they do not arrive at a consideration of the human body as a whole until the last year.

Another pursues the opposite course. He begins with a study of the anatomy as a complete system. He considers its functions, and then goes on to study the organs whose actions make function, and finally to the ultimate elements of which organs and tissues are composed, and whose aberrant functions afford the pathological disturbances with which it is to be his life's work to battle.

The student who spends his first year in a school that begins with histology, and who goes to one that ends its course with tissue elements, never gets beyond elementary matters in his entire college training. This certainly will not tend to make the best practitioners, or to raise our profession to its highest point of efficiency. There should be a comprehension of the benefits of each method, a careful discussion of the merits of all systems of teaching, and an intelligent and discriminating adoption of that which is best. To this end I have accepted the invitation of the executive committee to bring this subject before you.

I am a believer in the analytical system. I think it is easier to arrive at an understanding by taking in pieces that which we do not construct, and thus get at a knowledge of the mysteries of that which we must attempt to repair. Let me give you my reasons for this faith, and then please allow me to listen while you show me wherein I am wrong, or confirm my prepossessions by your own corroborative testimony. Do not then understand me as speaking dogmatically when I propose the following methods in teaching anatomy, but only as offering suggestions.

Our sole reason for examining tissues and organs is that we may learn their action and function. Hence we should begin with function. This requires that the preliminary examination should be of the system and not of its organs. The study of anatomy, then, should commence with a general examination of the body as a whole. In a dental school the first year should be devoted to general anatomy, beginning with osteology or the frame-work. Then the viscera should be taken up, and their general morphology and function should be studied. This should be followed by myology, syndesmology, and neurology, that a fair idea of the whole body may be obtained. Practical anatomy should be commenced this term and one extremity dissected. It has sometimes been urged that the student should not dissect until he has learned something of anatomy. This argument would be cogent if the object were to learn how to dissect. But we dissect to learn anatomy, and do not learn anatomy to discover how best to dissect.

All the study of this year should be general. Not a hint of any specialty should be given, and hence the teacher for this year is preferably a medical man. If he is a dentist, he is apt to introduce his specialty too early. The general study of the human body should be finished in the freshman year.

In the second or junior year the student begins to differentiate in his study. He should now take up regional anatomy. He has finished the study of the body as a whole. Not that he has learned all that he should, but he has devoted all the time that can be spared out of a three years' course, and he takes up the study of the part to which he is to devote his attention as a specialist. His field is bounded below by the clavicle, and he must have a special, definite, intimate knowledge of all above that.

As a part of this he commences the study of dental anatomy. The first step in this is comparative dental anatomy—that is, the study of the dental organs as a whole, precisely as he began the first year in general anatomy. The dentist who learns nothing of the general relations of the teeth, and whose comprehension of them is only that they are organs out of which he is to pick his living, cannot claim any scientific knowledge. The teeth in all the different classes of animals should be generally studied, until the dentition of man is reached, when his teeth should be intimately studied in all their anatomical relations. The anatomy of the second is, as a whole, devoted to organs, as is that of the first year to systems.

No man can finish the anatomical studies necessary to dental practice in two years. He imperatively needs the third year, and this should be given up to careful examination and investigation of tissues. In this year the microscope is a necessary adjunct. The student has now learned enough of function to comprehend how it modifies, or is modified, by structural development. In this third and finishing year he does not entirely confine his attention to histological anatomy, but he continues regional anatomy, because he is not yet sufficiently familiar with the organs, especially of the head. He also bestows considerable attention upon surgical, and morbid, or pathological anatomy. But his chief attention is given to structural or histological anatomy, and he thus finishes his course by attention to the minutiæ and detail for which he is unprepared during his first or second year, because he has not then the general knowledge to allow him fully to comprehend it, and because his mind usually is not sufficiently trained and disciplined to give him mastery over his attention.

The student who thus advances by regular gradations each year, separately taking up and mastering a definite branch or part of the subject, will be likely to retain his knowledge, because he has advanced toward it by a direct route, and because each division is made subsidiary to the next, and there is a regular gradation and progress.

If such a system, or if some other regular system, can be adopted in its general features by all of our schools, the grading of one who for any cause changes his college during his course will be greatly facilitated, and he will not be likely to miss any of the subdivisions. Our graduates will be better qualified for practice, and the tone of the profession will be elevated:

I would pursue the same general plan in the study of chemistry and physiology, the other basal studies of the theoretical curriculum. They should extend through the entire course, the last year in each to be devoted to special instruction adapted to an exclusive dental practice.

Materia medica should begin with the first year, but therapeutics cannot be profitably commenced until the student has obtained some knowledge of drugs, and hence it becomes a second and third year study, materia medica extending over the first two years.

Embryology properly belongs to the second year, because its study demands an acquaintance with technical terms that are all unfamiliar at the outset, and because it is an intricate and involved matter which requires a disciplined attention. Aside from these, there is no reason why it might not be begun with the freshman year.

Metallurgy is a second-year study, because its consideration demands a good acquaintance with general chemical laws, and these are acquired during the first year.

Surgery is a third-year study, because it demands not only a complete knowledge of anatomy but a trained hand and absorbed attention as well. The student should begin the study of surgical pathology in the second year, and it may perhaps form a part of his general pathological studies.

Pathology should be differentiated from operative dentistry. They have very little in common, save that each may be curative. But operative dentistry is wholly mechanical and manipulative, while pathology should cover all medicinal and general treatment. Operative dentistry is largely prophylactic, while pathology is so to but a slight degree. Whatever has to do with the action of drugs, whether generally or topically applied, belongs to pathological practice. In the treatment of alveolar abscess, for instance, operative dentistry has very little part, its practice being confined to that which is mechanical, or that which is done with instruments. I believe that in the past we have not sufficiently distinguished between the two. A sharp line of demarcation should be drawn between that which is mechanical and that which is therapeutical.

It will be seen that I have not attempted to assign any place to the practical part of dentistry. My subject was the teaching of anatomy, but I have thought it not inappropriate to suggest some thought concerning other didactic studies.

Let me repeat that I have considered the matter only tentatively, and realize as fully as any of you that there is room for much consideration and discussion before the various studies in our curriculum shall each have been definitely assigned its appropriate place.

THE AMALGAM QUESTION.

By J. N. Crouse, D.D.S., Chicago. Read Before Section III, Operative Dentistry, of the American Dental Association, at Old Point Comfort, August 4, 1897.

The exact date when a combination of different metals reduced to a plastic state, with mercury, was first used as a filling material in decayed teeth is not known to the writer; but the fact that amalgam has been a subject of constant dispute for the last thirty-five years, and that frequently during this time these controversies have been so vigorous as to destroy personal friendship and rupture the harmony of dental associations, and the additional fact that the questions under dispute are not settled, is sufficient proof that there are elements of uncertainty about amalgam and its use in dentistry which are more than trivial.

The careful and conscientious operator cannot but have had a feeling of distrust and uncertainty in the use of this much employed material when he examined carefully from all standpoints the results of the many amalgam fillings which every active dentist has had an opportunity to see. My use of amalgam has been very limited on account of the unfavorable results from its use by all classes of operators. Whether performed thoroughly or in the most careless manner, the fillings of amalgam in the mouths of the human family are far from satisfactory. The fact that the ravages of decay in many mouths continue and make fresh attacks beyond good fillings where the tooth substance is left exposed, and the causes which induced decay in the first instance are still present, prevents good fillings and good filling material from being distinguished from poor and imperfect fillings and worthless material. Even good gold fillings in unfavorable conditions often fail to accomplish what was expected, and this fact prevents a complete detection of careless and imperfect operations when this one reliable material is used.

From this line of reasoning, what is the stimulus to encourage the best efforts when using what ranks as the second best filling material employed by the dental profession, when out of sixty odd different preparations of alloy accurately tested, not one met all the requirements for a good filling material. These faults and defects have always been known to exist, and efforts have been made to detect which one of the great number of amalgams offered for our use was the least objectionable; or, stating it in another way—which was the best offered? Filling cavities in ivory, tooth-brush handles, or glass tubes, and then immersing in some colored fluid which would indicate the leakage, and various other tests have been employed, but we are indebted to Dr. Black for the first scientific method of testing amalgam. By the invention of a micrometer and dynamometer he was able to take accurate measurements and discover something of what occurred after amalgam was mixed and placed in cavities, and to determine scientifically their value; also to some extent what changes took place in amalgam fresh cut and after it had been what is known as "aged." The dental profession is indebted to this scientific investigator for many valuable facts brought out and many fallacies corrected, but we feel justified in the statement that the profession owes him a debt of gratitude for this work more than for any other.

While I have been able to confirm many facts brought out by Dr. Black it is not my intention to review what he has done, as it has already been published, but rather to supplement and with similar implements to take up other lines of work which are much needed. First. To make tests of the amalgams now in general use, and give the results to such as are entitled to them. This I trust will prove beneficial not only to us, but to our patients as well. Second. To show by the same aids that we do not know how to use amalgam when a good one is furnished, and I hope thereby to get more thought and skill developed in its use. I have gone far enough in this work to make a radical statement, namely, that the manufacturers are putting together metals without the necessary equipment, or the essential knowledge of the laws of metals and their relation to each other. At any rate, I will agree to prove that the amalgams on the market, as a rule, are unreliable and not uniform—lacking the essential qualities for a good filling material. The study of this question has so absorbed my thoughts and aroused my energies that I can no longer hold them in check. Let me present the picture to your view. A profession that boasts of its accurate attainments, and which has the reputation of having made more rapid advancement than any other, is without any means of knowing the quality or behavior of the material, when placed in the cavities of teeth, that is more used by it than all others combined. Hence the dentists at the present time are almost helpless in making a selection from the great variety of amalgams on the market, the choice being entirely guesswork with them. I make this statement with evidence to sustain it beyond question of doubt, for the tests of amalgam cannot be made, either in or out of the mouth, without an elaborate and expensive outfit and an expenditure of much time and careful work, so that in selecting an amalgam a simpler method must be found.

Since starting these investigations I have had unusual opportunities to ascertain what amalgams the profession were using, and I have found the very poorest in the hands of some of the best operators. In one brand especially it would be hard to find any less desirable qualities, yet this amalgam I found in more first-class dentists' offices than any other. The answer from dentists as to why they had selected this or that amalgam demonstrated the fact that they had no idea what working qualities it must possess to be fit for use. Most practitioners demand that an amalgam shall be very plastic, be easily mixed, and require but little mercury, yet the exact opposites of these qualities characterize a good alloy. The use of plastic amalgam is a great mistake, for it is impossible to pack it perfectly in a cavity. This is readily demonstrated by manipulating under a magnifying glass. The mass will be seen to move or shift from one side to the other, working like a molten mass.

Another mistaken notion is, that an alloy is injured by manipulation after it commences to set. The exact opposite is true, for a stronger and better mass can be made if the amalgam be properly handled and put to place by heavy hand-pressure or by malleting after it has fairly begun to set. This may not hold true with all varieties, since my experiments and investigations have been confined to one preparation, but it will be generally found true.

The third fallacy, accepted by very many, is, that the least amount of mercury possible to make the mass pliable is the correct manner of mixing, but in this case again the opposite is true. The greater amount of mercury that can be incorporated into an alloy without squeezing out any surplus, when reasonable pressure is applied, the stronger the filling will be. An amalgam which is easily mixed is generally recommended, when exactly the opposite is evidence of a good alloy.

I have brought with me the micrometer, two kinds of dynamometers and other implements, and invite inspection and practical tests with a variety of amalgams I have procured. In this way I hope to arouse more than usual interest in this important subject, although all the tests cannot be completed, as some amalgams will shrink and expand so much that the readings will show changes for many days; and the blocks of some will not harden enough to test their exact characteristics as to stress and flow in twenty-four hours, or even in forty-eight hours. However, many essential qualities can be shown while we are here, and I hope the benefits gained by those listening and taking part will be as great as the pleasure I have derived from this work.

ART IN DENTISTRY.

By G. W. Schwartz, M.D., D.D.S., Chicago. Read Before the Odontographic Society, Sept. 13, 1897.

"The art to please is a potent charm." This is generally so in practical dentistry; it is quite possible to do good, serviceable work for a patient, although the result may be woefully lacking in artistic restoration. At the present time there are scores of dentists who are doing serviceable work, but who are almost devoid of any artistic conception.

I believe the first requisite of the dentist is to be able to properly attend to decay of the natural teeth. Second, to put them in their proper position and relation to each other, keeping in mind the facial restoration. Third, to be able to make such restorations of lost teeth, or portions of teeth, as are most fitting to the case in hand.

Why is it we have such a lack of artistic work? Surely it is not a general lack of ability on the part of the profession, as some would have us believe. I attribute it to the desire for gain more than anything else, combined with a distaste for the slower and surer method of gaining a solid practice.

We will first take operative dentistry. I shall consider the work as it is usually done, without contour, proper polishing, etc. What would it mean to have made a different filling? Instead of finishing the filling at the first sitting, it would necessitate the slow process of separating; in many cases after separation stopping with gutta-percha a week for the soreness to pass away; next filling, consuming two or three times the time usually spent in building up, shaping and carving; last, the final polishing; very few dentists in general practice carrying this out to its ultimate conclusion. If they did the serviceability of the work would care for itself.

Next in order comes the regulating of natural teeth. How very few dentists can truthfully say they put irregular teeth in their proper position. It has long been a question in my mind if regulation were not the most important operation on the twelve anterior teeth, because if they are put in their proper position and relation to each other it lessens the liability to decay in every case. One of the most frequent forms of irregularity is the over or underlapping of the upper lateral incisors. In all these cases the liability to decay is increased, yet many of them can be easily corrected if taken at the proper time, often requiring only two bands and a few ligatures; sometimes nothing more than the proper tying of silk floss for a short time, followed with a retainer for a month or so. What could be more artistic than to put such teeth in the place where nature intended them to grow, and not only restore the facial expression but also prevent the unsightliness of gold fillings in them. We owe much in this line to Drs. Case, Younger and Angle. It cannot go unnoticed how really few artists we have in this line of work compared with the many who are dabbling in it. In many cases it is because the student has not had the proper instruction.

While I have given porcelain work third place in this paper, I do not consider it of any small importance. Those practicing artistic as well as serviceable dentistry will be called on at the present date to do many operations in porcelain. While there are many dentists who are doing porcelain work whenever it should be done, the majority are not doing any whatever. I believe that dentists who are not using porcelain in their practice are not up to date in crown and bridge work. When I say porcelain work, I mean porcelain baked for each individual case. I will briefly mention some of the cases where, from an artistic and esthetic point of view, porcelain should be used. I have for the past four and a half years ceased using gold in any of the teeth where it is very noticeable, more especially so in the mouths of women who are particular about their personal looks. For instance, take any of the anterior teeth where decay involves one-third or more of the labial aspect, I recommend the restoration be done in porcelain, even at the sacrifice of the pulp if necessary. If it is a question of saving the pulp or making the proper artistic restoration by devitalizing, I unhesitatingly choose the latter, if the patient is of an age when tooth and pulp are thoroughly developed.

While speaking of the anterior teeth I wish to say a few words regarding the crown I usually make when the roots are in good condition; it is one without a band. I prepare the root by grinding concave labially, to the middle of the root, slanting upward and backward to the palatal. By this preparation the danger of splitting the root is almost as small as if it were banded. After this preparation I take an impression in heavy platinum foil, trim to the size and shape of the root, then push the post through the foil into the root and solder. The next step is to fit and solder the facing, after which I bake porcelain to fill in and contour the back. After I have the case baked I remove the platinum foil, since it merely serves as a matrix to bake the porcelain the proper shape. Those who do not use this style of crown can appreciate it only by seeing it as applied to a case in the mouth. There are no unsightly joints or discolored margins of the gums. I feel sorry for the patient whose dentist is unable to make an inlay or porcelain restoration when the case demands it.

Before closing my paper I wish to speak of the value of modeling in clay in connection with the study of the anatomy of the teeth. While we already have valuable and thorough instruction in operative technique in the prosthetic department, we need more thorough instruction as to the anatomy of the parts to be reproduced.

I think there is no better way of obtaining it than by modeling with clay, getting the hand as well trained as the mind and eye. In porcelain work this cannot be overestimated. Three other dentists and myself spent a very pleasant time not long since in modeling in that way for about three months. We met once a week, took Black's "Anatomy of the Teeth" as a guide, selected a certain tooth to model, and worked all evening at it for the purpose of thoroughly learning the anatomy of it. It makes a lasting impression to model, where it would soon be forgotten if studied from the book alone.

DOCTORATE ADDRESS.

BY C. N. JOHNSON, L.D.S., D.D.S., CHICAGO. DELIVERED TO THE GRADUATING CLASS OF THE DENTAL DEPARTMENT OF THE UNIVERSITY OF MINNESOTA, AT MINNEAPOLIS, JUNE 2, 1897.

Members of the Graduating Class, Ladies and Gentlemen: I am often led to conjecture as to the probable permanency of the effect on an average class of students in listening to an ordinary address of this nature delivered by an ordinary speaker.

The object of our gathering here to-day, if I have a true conception of the occasion, is for the purpose of impressing you young men, who are just on the eve of graduation, with the future possibilities, the responsibilities, the duties and the high aims of the life upon which you are about to enter. In my relationship with students it is my constant lament that the common limitations of poor human nature prevent me from lifting a curtain here and there and showing them some of the dangers and pitfalls into which the recent graduate seems so prone to step. But with all my best endeavor in this direction I am oftentimes well-nigh forced to the conviction that all the advice a teacher can give will go for little or naught toward shaping the destiny of his students. I see so many young men going out to practice, and at once taking up methods which their professors had warned them against during their studentship, that it has sometimes disheartened me with my own efforts in this direction.

It seems to be necessary for the majority of young graduates to learn by experience those things which make most for good or ill in their future lives. Sometimes this lesson proves expensive and the learner may find himself in the mood of the poor Irishman of whom the following story is told: Pat was the sorriest kind of a blunderer and it was declared in the neighborhood that he spent a goodly portion of every day trying to rectify the mistakes of the day before. His lack of foresight became a by-word and no one was more impressed by it than Pat himself. One day the parish priest met him and, being in a particularly charitable frame of mind, said: "Pat, what is the greatest blessing you would care to have me bestow upon you this morning?" Pat doffed his hat and stood for a moment in deepest study. "Well, yer Riverince," said he finally, "I think the greatest blessin' ye can bestow upon the loikes o' me is to make me have the same mimory of the day afther to-morrow that I always have of the day before yistherday."

And so it may apply to all of us, that our foresight never seems so perfect as our aftersight. If young men could be made to realize this, and to accept the assurance of older men as to the ultimate results of certain methods of procedure in starting out in life, they would steer clear of many a pitfall leading to humiliation and defeat.

The words that I shall speak to you to-day may not sink deep into your convictions nor influence your future policy, but I cannot refrain from making one request. I ask you to at least weigh well what I tell you, in order, if nothing more, that in future years you may judge me as to whether my conceptions were right or wrong with respect to the influences and elements which are most active in the molding of a young man's career.

I shall address you of course almost wholly with respect to the young man in dentistry rather than from what might seem a broader and more inviting field, the young man in life; because I can conceive of no more potent factor for future good than to make, on such an occasion as this, the most practical application of every suggestion under consideration.

You are now on the borderland between promise and attainment, and whatever of good there is in store for each of you must come as the result of individual effort and application, rather than as a beneficence scattered by the gods for your especial bounty. If you can only be brought to realize just at this stage of your career that everything of good or ill in store for you in all the future years must be colored and formed by your own motives and methods, it will place you at once in touch with your responsibilities and give you a clearer conception and a brighter inspiration of the possibilities that are the birthright of every earnest actor in the great drama of human life. No man ever attained to anything noble or illustrious without the closest personal application. There is oftimes an illusion by which young men are deceived as to the agencies which produce success. They see a man riding along on a wave of prosperity with apparently little effort on his part, and they fail to reason beyond outside appearances as to the forces by which his success is attained. The mainspring of his accomplishment may be hidden from superficial vision, but behind every great achievement there must be somewhere, sometime the impetus of a persistent and intense application. There is no royal road to success any more than there is to learning, or the state's prison.

I very well remember when a boy going to school of a classmate I had whose father was well favored financially and who gratified every whim of his son. The boy was never proficient in his studies, and as a consequence was in a class with pupils much smaller than himself. His difficulty in getting up his lessons became proverbial, but none of us as I remember it ever suspected the true cause at the time. Looking back over it now it is clear to me that the reason for his deficiency lay in the lack of that necessity which spurred the rest of us on. His life was made too easy for him and this encouraged a lack of application which made a dullard of him. I recall vividly one day as we were walking home from school after the teacher had reprimanded him, seeing a disheartened, discontented look come over his face as he held out a book in his hand and declared vehemently that he wished the knowledge in that book might be transferred to his brain for a money consideration. He did not appreciate the philosophy of getting down to a course of hard study which would have made him master of the book, but if his father's money could have bought him learning he would have accepted it. In that class there were several boys who have made themselves felt in the world, but I have never even heard that boy's name mentioned since we parted at the schoolyard gate. And yet I have no doubt that his native ability was as great as that of any student in the school. All he lacked was application, and this lack was fostered by his environment.

Personal application is the keynote of attainment along all lines of human endeavor. In this connection arises the important consideration of the judicious utilization of time. The average member of the human family wastes more minutes in a lifetime than can well be counted. In this latter day of immense aggregate accomplishment the very moments are important, and in a profession like dentistry the sixtieth part of a minute counts for something. Have you ever stopped to consider how many movements with an instrument can be made in a second by a hand trained to the highest perfection of manipulative procedure? A dentist owes it to his patient to accomplish as much in a given length of time as the greatest degree of skill will permit, and every young man starting out in practice should aim to study economy of time as well as proficiency in workmanship. The rapid advance of dentistry imposes increasing exactions upon those who choose it as a calling, and the man who putters at his chair will soon have time to putter through lack of patronage.

As I look over the profession and study the limitations of my fellow practitioners, I think if I were asked to name the greatest failing in their every-day work I should unhesitatingly say, a lack of definiteness. With very many men there seems to be a total want of method or system or definite procedure in the details of their work. Everything is haphazard, slip-shod and come-by-chance. The man who picks up an instrument with a definite purpose and goes straight to the accomplishment of that purpose will not only save time, but will impress his patient with his proficiency.

To be an expert dentist demands a rare combination of good qualities. A dentist is called upon to accomplish more in a way than any other man. The general surgeon is often pointed out as an individual whose attainments entitle him to the homage of mankind, and in truth he deserves all the praise he gets. But did it ever occur to you how much further the dentist goes in his service than the surgeon? The latter simply removes diseased parts, and depends on nature to heal the breach. If he finds a tumor, a sloughing appendix, or a bit of necrosed bone, he takes away the diseased tissue and nature repairs the loss. Nature is exceedingly kind to the surgeon and is his main ally, no matter how expert he may be individually. Not so with the dentist. When a decayed tooth presents itself, he proceeds to remove the carious tissue along the same lines that are employed by the surgeon, but he must go a step further. Nature will do nothing to aid him in repairing the loss. A bit of enamel once gone is gone forever. A cavity in a tooth will never fill up by natural processes. It remains then for the dentist by virtue of his high mechanical attainment, his knowledge of anatomical forms, and his artistic perceptions to make good the loss. For this purpose he goes out into the field of nature and presses into service that royal metal which is the insignia of all that is pure and precious among its kind. With this he reconstructs the maimed and broken member, giving it new form and utility, and creating a thing of beauty where before there had been nothing but a blemish.

And this accomplishment calls for a high degree of skill and manipulative ability. I once heard a dental surgeon say that he had performed all the ordinary operations about the face and mouth, such as removal of necrosed bone, removal of tumors, resection of nerves, operation for cleft palate, etc., and that in all his experience he had never encountered any kind of operation that demanded so high a degree of skill as the filling of a difficult cavity in a tooth.

This should lead us to judge the work of our fellow practitioners with a large measure of charity. You young men should bear this in mind when you go out to practice. If you encounter a mouth where the work of the previous dentist seems defective and not up to the standard, you must hesitate before weighing his skill and reputation in the balance against the superficial evidence presented. You are never able to judge as to the difficulties under which the work might have been performed. The patient may have been unduly nervous, or the operator harassed by the thousand and one little worries and annoyances which assail the dentist at every hand. The fact that you are able to make a good filling for the patient to-day does not argue that the same thing was possible a week before. Recognizing all of the limitations under which a dentist is called upon to work, I am so far inclined to leniency in later years that if I see in a mouth one really artistic and beautiful piece of work, even though that which surrounds it is far from perfect, I put the operator down as an expert and one who is worthy of my admiration. I give him credit for having the ability to do the best of work and lay the failure to accomplish this in all cases to the lack of opportunity or to untoward circumstances of which I am not at present cognizant. I would commend this kind of charity to you young men, with the intimation that you will see much in your professional life to call forth its exercise. At the same time I believe it to be necessary in judging your own work to hold yourself strictly to account for every failure. You cannot be too self-critical. I can find in my heart of hearts a thousand excuses for the slips and slides of my fellow practitioner where I have nothing but censure for my own shortcomings. A good motto it seems to me would be: "With charity for my fellows, but no quarter for myself." If a man lives up to this standard he will accomplish the best that in him lies, and live at peace with his fellow men.

Every young graduate that goes out in the world to practice dentistry has a definite influence either for weal or woe upon the reputation of his profession. The estimate that the world places upon the rank and file of any calling is made up of the odds and ends of impressions received in its intercourse with individual members. Every clean-cut, well-balanced and cultured gentleman practicing dentistry lends a definite and far-reaching impetus toward the general elevation of the profession. I shall never forget the impression made on me in the early days of my studentship by coming in contact with a man who had personally known Chapin A. Harris. One day I was introduced to a distinguished-looking gentleman of dignified bearing, and in the course of conversation he inquired as to my occupation. When informed that I was studying dentistry his face lighted up and he seemed to take renewed interest in me from that moment. "Why, sir," said he, "I knew somewhat intimately a man in your profession who was not only a good dentist but one of the most intellectual and widely-cultured gentlemen it was ever my pleasure to meet." And then he told me many of the personal traits of the man whose "Practice and Principles of Dentistry" was one of the first text books I had ever read. My half-hour's visit with this stranger is numbered among the most pleasant experiences of my professional life, and somehow I left him with an exalted conception of the possibilities of my chosen calling and an increased respect for a profession which could claim as its very own a man capable of commanding from his associates such a eulogium as I had just heard.

Let me appeal to every one of you young men to-day to think seriously upon this phase of your professional life. Remember it is not only for your own reputation that you must labor, but for the broader benefit which may redound to the credit of the profession at large; to the end that your impress—which need not be small—may tend to the elevation of this profession which in the modern march of civilization demands so much from its devotees. Look over the history of dentistry in the past and pick out the names of those illustrious in its development, read the literature of to-day and note the men who are finding new facts and systematizing old ones for use in the rapid evolution of latter-day ideas, and then consider what your attitude shall be when it comes your turn to face the problem of the proper maintenance of professional progress. When you entered upon the study of dentistry you assumed greater obligations than you probably ever dreamed of at the time, and I say this to you from the basis of a short but varied professional career that your obligations will increase as the years go on. Soon the time shall come when the men most active in the counsels of the profession to-day will have yielded to the inevitable reaper and left behind them nothing but the memory of the good they wrought for their fellowman. The evolution of dentistry will not be complete when they have ceased their labors. They must leave many problems unsolved for their successors to work upon. Their successors will be the young men of to-day, and you may be among the number.

What are your pledges now as you are just entering the profession and have everything of attainment before you, what are your resolves as to the future possibilities of progress when yours shall be the hand that holds the helm and yours the brain that guides the ship? I beg of you now while you are in the formative stage of your professional existence to so shape your course that when the time comes for you to assume the responsibility of maintaining the dignity and reputation of the profession, you shall be well equipped to take up the work where others leave it off, and carry it to a riper and still richer fruition. You owe this to your profession, you owe it to the teachers who have labored long and earnestly with you in college, and more than all else you owe it to that indefinite but ever-present entity, your fellow man.

With this end in view it behooves you to grasp every opportunity for adding to the sum of your knowledge. Remember, this is an age of wondrous advances along all lines of thought, and in no profession is this more true than in dentistry. You cannot take it easy and keep up with the procession. When you were baptized into dentistry you were born to a life of hard work. Nothing but the most persistent effort will keep the majority of us abreast of the advance guard. It is only a genius here and there who runs ahead and points the way. And yet it lies within the province of each of you young men to so apply himself that he may eventually lead in some one thing. As I have already said, the greatest obstacle to attainment in any special pursuit is the lack of definite, intelligent and continuous application. Most men have the ability to accomplish something in the world, but very many of them do not seem to have inherited the impulse to apply themselves. This should teach us to cultivate this tendency and make the most of what nature has given us.

Your training in college has well fitted you for a life of study. If you have improved your time, as I trust you have, you are just in a position to know how to learn. To know this is to know much. Many men through lack of this achievement spend an enormous amount of energy without material accomplishment.

The first thing for a young man to learn is to understand definitely the demands that his chosen pursuit entails upon him. In other words, he should have a clear conception of that which he is expected to accomplish. Not until he has this can he intelligently proceed toward that accomplishment. As a practical illustration of what I wish to convey, let me ask how many of you ever stopped to consider the full significance of what you are called upon to accomplish when you fill a tooth?

Your first answer to this probably would be that you are expected to accomplish several things, but let me carry you for a moment into the details of one feature of this operation which I venture to believe has never yet occurred to you. I am at least confident that it has never occurred to one in fifty of those who have practiced dentistry a quarter of a century. Let us suppose that you are called upon to insert a filling on the occlusal, or proximo-occlusal surface of a molar or bicuspid. Have you ever stopped to estimate the test to which that filling would be subjected in mastication? How many occlusions does the average individual make during an average meal? Have you ever tried to count? I have many and many a time, but I wish here to confess that the limitations of human nature have been such in my case that I have never yet succeeded in counting the number of occlusions I made from the beginning of a meal to the end. My propensity for having something to say to my associates at table has oft and anon broken up many a well devised plan for a true estimate in this particular. I have been struggling with the problem for months, and I have had many of my good friends at work upon it, but up to the time of writing this address I have never succeeded in getting a full count. May I here and now enlist some of you young graduates to aid me? It will at least direct your thoughts to an important consideration in the anchorage of these fillings, and I think it will lead to a surprise in the possible number of occlusions necessary to masticate an average dinner. I have counted more than eight hundred during a part of one meal, and my observation would lead me to believe that one thousand occlusions would be a conservative estimate.

Stop a moment and consider what this means for your filling. Say that half of these occlusions fell on one side of the mouth, and that half of this number fell directly on the filling. This is an exceedingly conservative estimate, because in the management of the bolus of food in mastication it is distributed over so large an area that it would be difficult to masticate it on the side containing the filling without pressing against the filling. So at each meal there would be an average of at least two or three hundred impacts on that filling. The force of mastication runs anywhere from thirty to three hundred pounds, varying in different individuals. Let us take the lowest. Here we have a force of thirty pounds exerted on that filling consecutively for two or three hundred times at each meal. Estimating this for one year we find the enormous number of more than 200,000 occlusions of thirty pounds each. Suppose we insert a filling for a patient twenty years of age with the probability that the tooth will be required to do service in that mouth for forty or fifty years, think of the test to which that filling will be subjected in all those years in the mastication of food, to say nothing of eating candies and chewing gum between meals! Millions on millions of impacts varying from thirty to three hundred pounds!

With such a staggering array of figures looking us in the face while we are operating on that tooth, are we not likely to proceed in our work with a degree of care and thoroughness that we would not have thought necessary in the absence of this estimate? And this is only one of the many considerations to be taken into account in the insertion of a filling. Think for instance of the countless hosts of microorganisms that will constantly lodge against the margin of a filling to bring about a recurrence of decay when that margin is not extended to a point where it is readily kept clean by the natural processes at work in the mouth.

I commend to you a detailed study of all these considerations connected with your operations, with the belief that a just appreciation of them will lead you to a more intelligent and more painstaking performance of your work. It is this mode of thinking which arms the young man against mistakes of judgment, for we must realize that in dental operations there is no detail that is not of importance.

But I must not weary you with practical ideas which have already been so well taught to you in college. My office here at this time is simply to speak a word of good cheer and offer you my congratulations on the happy consummation of your college work. You are fortunate in entering a profession which offers so much to you in the way of future achievement. You are favored in the fact that the institution from which you graduate ranks so high in the world of dental education. Your auspices are all favorable, and it remains with you to so develop your faculties and apply your energies that you will prove an honor alike to your profession and your alma mater, and a blessing to your race and generation.

ANENT HEADACHES.—Those of nasal origin are commonly present in the morning on awakening; those due to eye strain come on later in the day and after using the eyes.—*Medical Summary.*

POWER OF THE SILVER SALTS.—In No. 8, 1897, of the *Centralblatt fur Chirurgie* Professor Crede criticised the article by Dr. Carl Meyer, of the Hygienic Institute of Zurich, dealing with the citrate and the lactate of silver. Meyer repeats Crede's experiments with respect to the antiseptic properties of these salts, and found them to have a less vigorous action in this respect than their proposer believed. Crede calls attention to the fact that in experiments dealing with the bactericide powers of antiseptics there have been very great differences of opinion between individual investigators; but he claims that, after all, the important point is whether the citrate of silver is an antiseptic strong enough to meet the demands made upon it in actual practice. Meyer himself decides this question in favor of the salt; for his experiments with blood serum show that it was just as powerful in its action as corrosive sublimate, the crown of antiseptics. It is quite unimportant, Crede believes, whether or not its action is weaker when it is in watery solution than is that of the mercurial salt; for in this form it is but little used as a dressing. Furthermore, besides their potency and the absence of local irritant properties, the silver salts have the very valuable quality that they can be taken into the body in large quantities without danger, and that they develop, while in the circulation, powers even greater than those that they show with lifeless albuminous solutions. In these respects they differ markedly from sublimate and many other antiseptics.—*Berliner Klinische Wochenschrift, March 15, 1897.*

Digests.

BRITISH TEETH ON THE DOWN GRADE. By Chas. Fox, L.D.S. Cause 3. The study of no single organ or tissue throws more light on the general question of disease origin than researches in connection with the teeth. Open as they are to direct and constant observation, we can better diagnose their immediate condition, speculate on the etiology of their abnormal state, and mark the effect of changed environment, local and general, than in the case of any internal organ. If then it be said that these remarks on the effects of impoverished air might equally apply from a phthisical, dyspeptic or neurotic point of view, we may reply that not only are the teeth directly associated with these other ills that flesh is heir to, but we can more easily demonstrate vicious causes. Just as an Owen or Huxley relies on fossil molars for the reconstruction of some antediluvian monster of forbidding shape, and the science of comparative anatomy steers by a dental compass; so in the evident deterioration of teeth and the contemporary presence of certain features of modern life we can run these causes to earth. Never must we forget in our close attention to a special set of organs, that the body is one complex entity, not a collection of parts cooperating for certain purposes.

It may not have struck everyone that the improvement and cheapening of artificial light is at the bottom of many of our labor troubles. When sunset ruled the length of the working day for much of the year, an eight-hour day was practically realized; but as soon as it paid to use artificial light, there was only the limit of physical endurance or human acquisitiveness. This toiling in gassy rooms, where the oxygen is being consumed by every burner five times as fast as a pair of lungs can manage, is no slight factor in the question. In not one room in a hundred thousand is there a scientific system of ventilation, and the burnt-out smell and taste of the air as one enters even a large drawing-room, where gas or lamps have been lighted for hours, is familiar to all. Take the trouble to examine the mouths of people who have thus been working or resting in a well-lighted chamber or public hall, and you will find furred tongues, gums and teeth coated with slimy mucus swarming with low forms of life, while the saliva has lost its healthy alkalin tone. In the incandescent electric light is an element of hope, for the air is not robbed of its oxygen by these vacuum globes, but if it tempts people to prolong their confinement in unventilated rooms the evil will remain uncured. Concerned as we are in the care of children's teeth especially, it is well to bear in mind that a growing child requires twice as much oxygen as an adult, and is poisoned far more readily by carbonic acid gas. With the blood impoverished and the mouth directly fouled by impure air, no proper dental development can be expected. And yet the old superstition of the bad effects of night air on infants troubles the careful mother's mind, and windows are fast closed and chimneys bunged up. Pass down a city street in the early morning hours and note how few bedroom windows are open, and one may make a mental memorandum that in those few houses live intelligent, sane people. The modern house with its well-fitted sashes, its gas burners and its bedroom upstairs, where the hot foul air has risen from the living rooms below, is distinctly inferior to the wigwam of the savage as a sanitary home for human beings. The North American Indian knew neither consumption nor caries, but there was a thorough current of air from the door to apex of the hut, and no night-light in a shut-up ''cosy'' room for their poor little papooses to share the air with.

The committee of a Yorkshire elementary school where 170 children were educated, receiving a complaint from the mistress of the intense cold during the winter, supplemented the insufficient fire warmth by lighting all the gases for two hours before the children assembled. There was absolutely no ventilation at the top of the rooms because these wiseacres had pasted over the outlets to economize the warmth, and the mistress and a number of the infants were very soon on the sick list in consequence.

Another new feature in nineteenth century life, running parallel with this marked deterioration in teeth, is the habit the race has acquired of rushing about the country cooped up in boxes of inexpressibly foul air and subjected to continuous vibrations of a very nerve destroying character. Samples of air were taken from a closed railway carriage after ten people had journeyed fifty miles; from a London doss-house dormitory; a sweater's den; Sheffield streets, and a mountain top. The railway carriage sample was by far the worst, beating the dirty sleeping-room where eighty outcasts were festered together, and the tailor's workshop where thirteen pallid wretches stitched for life amid the fumes of a coke furnace. I heard a so-called educated lady the other day congratulating her friend on finding a full carriage where, "You'll be nice and warm, my dear, and mind and keep the window shut and close that horrid little ventilator, it will make such a draft and increase your cold." And then the poor dear wonders why her holiday and change of air have done her no good, and worries the doctor and dentist as to the reason for her cold being so stubborn and her teeth working loose and the gums getting so inflamed. Our great grandfathers traveled but now and then, while we spend a very big slice of our lives on the rail. They often preferred the outside of a stage; their descendants seek the warm corner of a stuffy compartment.

Lectures on the most abstruse scientific subjects dealing with the intricacies of obscure diseases are given oftimes in rooms poisonous with the breath of crowds of students. Political meetings for the reform of social conditions are held in rooms not fit for half the bearers to remain for a fourth the time, and the yawns of worshippers in churches with poisoned air are due more to want of oxygen than to any lack of eloquence on the preacher's part.

If we are honestly to answer the query of our patients, "why are the children's teeth so bad now-a-days," we must include the undue proportion of time spent by the majority of young people in artificially lighted, unventilated rooms, in closed carriages, insanitary schoolrooms and churches; and hold forth with all the ability we can on the cleansing properties of abundant fresh air, one of the finest dentifrices ever discovered.—*Brit. Jour. Dent. Sc., August, 1897.*

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IMPLANTATION AND ASSOCIATED OPERATIONS. By R. H. Cool, D.D.S., F.S.C., San Francisco. Read before the Pacific Coast Dental Congress, July 13, 1897. Perhaps the best definition of implantation is that given by Dr. Louis Jack, of Philadelphia. It is as follows: "*Implantation.*—Where an artificial alveolus is made by trephining the process at a vacant place, in which opening a suitable natural tooth is introduced." Dr. Jack differentiates implantation from the operations known as replantation and transplantation in these definitions: "*Replantation.*—Where any given tooth of a person for various reasons may have been removed, and, after certain manipulation of the tooth and treatment of the socket, is replaced." "*Transplantation.*—Where teeth removed from one subject are, with proper precautions, placed in an alveolus of another immediately after the extraction of a diseased or fractured tooth.''

These three operations become related to each other by reason of the exigencies of particular cases. For example, in orthodontia it sometimes becomes expedient to extract a tooth, form an artificial alveolus, and replace the tooth in the patient's mouth, using, however, the alveolus prepared by trephination. This operation partakes of the nature of both replantation and implantation. Whether the use of the same tooth extracted facilitates the ultimate result or not I am not prepared to state; but of course that procedure is most expedient because it saves the labor of ''matching'' the other teeth of the patient with a suitable alien tooth. In the treatment of pyorrhea alveolaris it becomes necessary sometimes to remove a tooth, prepare an artificial alveolus and plant either the root of the tooth just removed or the root of a healthier tooth with the crown of the original tooth attached thereto. We have no single term to express either of the operations mentioned in the above illustrations, but perhaps none is required, as the difference between the operations of replantation, transplantation and implantation is, I think, sufficiently well understood.

In a paper of limited scope it will be impossible for me to discuss in detail the various theories of scientists regarding the union of planted teeth and the histological process by which such union eventuates. In fact, there is great difference of opinion upon this among those who have made a study of it, and the observations of none of them seem to be conclusive. Dr. Younger still adheres to his theory of ''persistent vitality of the pericemental membrane.''

Dr. Oscar Amoedo, of France, in 1894 recommended the decalcification of the surfaces of the teeth to be implanted, claiming that thereby the best results were obtainable. His theory is that of osseous union.

I may remark here that my own failures have all occurred in cases where the membrane has been destroyed. Therefore, in selecting teeth for this operation I carefully examine each one with a powerful glass to determine whether or not the pericementum is intact. On the other hand, I have been successful with teeth in which small patches of the membrane were missing, but in such cases I have carefully decalcified the surface at those spots. Suffice it to say, that whatever may be the scientific reasons for the success of plantation of teeth, certain it is that the result is satisfactory in a majority of the operations that are skillfully performed, and with a due regard to the selection of teeth and avoidance of surgical infection. In this paper I shall deal with the practical and surgical features of plantation, rather than the histological theories in regard to it.

All extracted teeth are infected; if not by specific infection, then by the mere manipulation incident to their extraction. Therefore, the first principle of plantation as well as of all surgery should be and is asepsis. Without proper aseptic precautions no operation may reasonably be expected to be a successful one. Formerly great reliance was placed on carbolic acid and bichlorid of mercury, but objections have been urged against the use of bichlorid of mercury in preparing teeth for plantation, owing to the fact that any solution of bichlorid sufficiently strong to be a useful germicide is destructive to the vitality of the tissues. Carbolic acid and its allied preparations, although excellent in their way, are objectionable because of the fact that they are coagulants. Trikresol, used in solution of the strength of one-fourth or one-half of one per cent, is preferable to carbolic acid, it being absolutely pure and five times as efficient as carbolic acid. For a long time I used a saturated solution of boric acid. More recently I have been using Cabot's sulpho-napthol, two minims to the fluid ounce. This preparation I use for disinfecting my instruments, sterilizing the oral cavity, and for securing thorough asepsis of the tooth itself.

Preparation of the Tooth.—In preparing the tooth there should be a complete removal of all of the contents of the pulp-canal. Being a firm believer in the thorough sterilization of the dentin of the tooth, I advocate the use of a disinfecting agent, which by its chemical action will destroy the mephitic compounds that occupy the tubuli. I have found nothing better for this purpose than the oil of cassia. Having thus treated the canals I then proceed to fill them, and I know of nothing more suitable for that purpose than gutta-percha. All deposits should be thoroughly removed from the external surface of the tooth, and the tooth should be left in the antiseptic solution for several hours prior to performing the operation.

Anesthetic.—Local anesthesia is to the stomatologist what general anesthesia is to surgery. In the different operations of plantation I use, to commence with, about a 33⅓ per cent solution of cocain, employing a portion of a minim at a time. I seldom find it necessary to use more than from ½ to 1½ minims of this solution. I then continue the operation with a solution of 1½ per cent of cocain. In this way I invariably secure a result that is both satisfactory to the operator and devoid of danger to the patient.

The Incision and Preparation of Alveolus.—No fixed rule can be formulated for the incision to be made in preparing for the insertion of the tooth. Much depends upon the local conditions, and the surgeon must look to the artistic appearance as well as the surgical success. To secure this there is no teacher like experience. An old soldier once said: "War is the only true school of generalship"; so operating is the only true academy of surgery. In the insertion of incisors and cuspids the operation known as the "flap operation" should be practiced. The line of incision being established, the gum should be dissected from the alveolar process, care being taken not to cut out the gum more than is absolutely necessary to secure space for the tooth. With trephines and properly shaped burs with movable gauges, the length of the tooth and the depth of the alveolus required may be ascertained. These trephines and burs are made in different sizes, so that the operator with a little practice can shape the alveolus in accordance with the contour of the tooth. A particular point to be observed is the thorough removal of all debris, using for this purpose one of the antiseptic solutions heretofore mentioned, and also employing some peroxid preparation on account of the peculiar cleansing properties appertaining to such oxygenic preparations.

In preparing for the implantation of superior bicuspids and molars, care should be taken not to penetrate the antrum; and often, on account of the extreme thinness of the alveolar process, it is better, when implanting for bridgework to turn the lateral surfaces of the root to the buccal and lingual aspects. Finally, to avoid all possibility of surgical infection, the mouth and even the throat of the patient should be sterilized with pyrozone spray or something equally efficacious. The hands and instruments of the operator should, of course, be kept constantly moistened with the antiseptic. Next, the alveolus should be properly dried and the tooth carefully and firmly inserted in the place prepared for it. The theory has been advanced that the tooth should be driven into the socket. This is not necessary and such procedure is likely to produce irritation and cause a failure of the operation.

I have studied and experimented with splints, plates, pins, anchorages and the various other devices employed for retaining the tooth in position before attachment of the tissues is accomplished. These are all subject to the objections that they are uncleanly, cumbersome, uncomfortable to the patient, and that they interfere with articulation and mastication. Such devices are prolific sources of the failure of operations. For the foregoing reasons I have adopted the use of silk ligatures. By the correct use of such thread the tooth may be so ligated as to be held absolutely firm in its place, while the ligatures occupy so small a space that they will not act as irritants. Properly applied these ligatures will last from one to eight weeks.

Cases of Implantation.—There has been doubt expressed in regard to the advisability of performing the operation of implantation in cases of syphilitic diathesis. I have demonstrated before the Stomatological Club that in cases of syphilis, where the teeth have been lost through the disease itself and the specific treatment employed, implantation may be and is successful. In August, 1895, Mr. S., a patient under treatment for secondary syphilis, came to me. The right lateral incisor had loosened and dropped out. The crown of the tooth was intact, so I removed it and attached it to a healthy alien root. An artificial alveolus having been prepared, the tooth was successfully planted and is in a perfectly healthy condition at the present time. In the latter part of the same year a man suffering from syphilitic ulcer of the tibia, and under medical treatment, lost the two inferior central incisors. I implanted two new teeth, and a letter received from him a few weeks ago informed me that they were the "best teeth in his mouth." On March 2, 1897, at a clinic of the Stomatological Club, I implanted the root of a right lateral incisor in a syphilitic subject for the attachment of an artificial crown. At this date (July) the tooth is a solid and useful member. These cases I think demonstrate the fact that this unfortunate physical condition does not exclude the patient from the advantages of this operation.

Numerous cases have also demonstrated that pregnancy is not a bar to successful implantation. Of course in all operations during pregnancy care must be taken not to produce nervous shock, but this operation is so painless that the careful operator need never shrink from performing it upon a pregnant patient.

In January, 1897, Mrs. M., a woman of exceedingly nervous temperament, who had fallen into the hands of the Philistines and had all of the superior teeth between the first molars extracted, presented herself for insertion of bridgework to fill this awful hiatus. I informed her that it would be necessary to implant two roots in the places of the late lamented cuspids. Although she had been enciente for more than three months, she insisted upon my performing the operations. I implanted a root on the right side, and on the following day she returned and insisted that the second root should be inserted. I performed that operation also, and in due course of time the bridgework was attached. The lady suffered no unpleasant consequences from the operations, and is delighted that she has been able to banish her much-hated plate.

And right here let me assert that the use of implantation in conjunction with bridgework demonstrates more than anything else the stability of teeth so inserted. I know of many cases of from one to six years' standing in which implanted roots have been used to sustain bridges, especially in cases where the bicuspids and molars have been lost and a root has been implanted in the position of the molar to sustain a bridge attached to the cuspid.

I will cite but one case in which implantation was used in orthodontia. It was the case of a Mr. S., whose incisors protruded to such an extent that not only was his appearance disfigured but his articulation was greatly impaired. Dr. Younger, with my assistance, extracted the four incisors, made artificial sockets and implanted the teeth in their normal position.

In the treatment of pyorrhea in its advanced stages it becomes necessary to implant and replant teeth, and this, as I have indicated previously, is where the two operations merge one into the other.

Adaptation.—A most wonderful phenomenon in connection with implantation is found in the fact that the implanted tooth assumes the color of the adjoining teeth, so that it is impossible to distinguish the implanted tooth from those that are "to the manor born." —*Pacific Stomatological Gazette, August, 1897.*

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THIRD SET OF TEETH. By S. B. Palmer, M.D.S., Syracuse, N. Y. An extract from an article in the June, 1896, issue of the *International Dental Journal* reads as follows: "The *Sunday Herald* of Syracuse reports a case at considerable length of one

James Slattery, of that city, who has apparently erupted late in life a portion of the full denture, with the prospect of more teeth presenting in the near future. Dr. S. B. Palmer, of Syracuse, made an examination of the case. This seems the best attested report of third dentition we have met with on record, and it is hoped Dr. Palmer will secure testimony as to the character of the set prior to becoming edentulous through advancing years. The dental profession has regarded a third set of teeth as a myth, and with some reason, as most of the so-called third sets have proved, on investigation, to be simply delayed dentition of the regular second set.''

The history of this case, together with facts which came under my own observation, and statements from Mr. Slattery himself, also from an unmarried daughter who had her home with him, I believe establishes a case of third dentition beyond a doubt.

James Slattery was born in Ireland in 1805. In 1832 he came to Napanee, Ontario, and two years later settled in Liverpool, near Syracuse, New York. He soon became a prominent salt manufacturer, owning his own plant. With the decadence of that once lucrative industry he, in 1867, removed to his farm and devoted himself to market-gardening. Mr. Slattery was a remarkably well-preserved man and enjoyed robust health. When in his prime he was a well-developed man of six feet two inches, weighing two hundred and thirty pounds.

On mentioning the object of my call, I learned that he had carefully avoided notoriety, and had concealed the fact from his family as long as possible for fear that people would joke him about it, and would say that ''Slattery was a baby and was just cutting his teeth.'' A moment's examination was convincing that the case was not a myth, and great care was taken in obtaining notes from which this report is a summary.

In the inferior maxilla were eight teeth located as follows: Four incisors and two cuspidati, and two bicuspids on the right side. The cuspid on the left side and the second bicuspid on the right side were somewhat loose. The other teeth were firm, of usual size and length. They were somewhat overlapped from crowding. The color suited the age, which I attributed to smoking. The teeth showed no wear, as teeth with the use of seventy-five or eighty years would have done, in holding a pipe. He showed how he could do it by placing his pipe in his mouth and pressing it against his gums above. He said he could not do that for twenty years owing to the loss of his teeth. On the left side, in place of the two posterior teeth ordinarily found, were three parts of teeth resembling roots, having grown up partially out of the gums. They were not firm or well-developed teeth. The man insisted that they also appeared within the time mentioned, two years previously, and that they belonged to the same set. I am satisfied that they were roots belonging to the second set, which had been covered by the gums or had escaped his notice until attention was called by the eruption of the teeth already mentioned. The other portions of the jaw showed no signs of further eruption of teeth, as considerable absorption had taken place.

An examination of the superior maxilla plainly showed that the third set, more numerous than those in the inferior, would soon make their appearance. The jaw was thick and full, nearly all the way back raising the lip and cheeks, giving the fullness peculiar to a child's jaw of six or seven years, or about the period of the eruption of the teeth of the permanent set. Mr. Slattery said his "jaws pained him very much; that the new teeth pricked the gums like needles," and "there will be a full set, except where I had a tooth pulled. I never had but one pulled, and a piece of bone came out with it. Now there isn't any tooth coming in there at all; that's the only vacancy, and that ain't sore." I examined the "vacancy;" the depression was unusually deep, owing to the growth of new process to support the incoming teeth. This closed the examination, and I intended to make another call in ten or twelve months.

Mr. Slattery died suddenly of heart disease, April 24, 1896, a little over eight months from the examination. I did not learn of his death at the time, but made two calls upon the family, from which I gained the following information. Having requested his daughter to observe developments, I believe her statements correct. The superior maxilla became painful, and the teeth erupted nearly at the same time with wonderful rapidity, so that before his death the upper denture was complete, with the exception of the place where the tooth was extracted. I asked as to the color of the teeth. She said they were yellow, much like the teeth of an old person. They were well developed. Soreness had abated and mastication was restored. I made inquiries respecting the teeth reported loose in the inferior maxilla. "They became firm like the others."

The *cause* of the crumbling away of the second set without severe pain, and that none were extracted save the one already mentioned, Miss Slattery could give no information about.

That a man of robust health, and otherwise so well preserved, should lose his teeth and roots as well, calls for some constitutional change not usually met with. It could not be charged to pyorrhea, because none of the teeth came out sound.

A patient whose teeth have been under my care for fourteen years or more are fast going in a like manner, giving little or no pain. He is a plumber and has for years been engaged on soldering roofing and galvanized iron cornices, etc. He said the breathing of the fumes from muriate of zinc (soldering fluid) had destroyed his teeth. The case before us seems to bear upon the same principle, and it is reasonable to suppose that the manner in which the roots came from the maxilla prepared the way for the conditions which followed.

Mr. Slattery was a salt manufacturer. For many years much of his labor was done in a "salt block." Evaporation was by boiling, and the warm vapor was at times almost blinding. When not engaged in dipping salt from the boiling-kettles, the packing of moist salt was performed in an atmosphere highly charged with chlorid of sodium.

The suggestions as to the cause of loss of teeth, etc., are my own. The history of the case as obtained from the family, with my personal observations, convinces me that nature gave a third set of teeth as described.—*International Journal, August, 1897.*

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CLEANSING TEETH. By Albert H. Brockway, M. D. S., Brooklyn. Read at New York Institute of Stomatology, April 6, 1897. I will say as an excuse for speaking on what may perhaps be considered a trivial matter, that I believe it is one to which many dentists give too little attention, and yet it seems to me that few of our operations are more generally beneficial or more highly appreciated by our patients.

In my own practice I make it preliminary to all other operations for several reasons: it familiarizes one with the character of the mouth and the condition of the teeth, and—this is important with timid or inexperienced patients—it also serves as an excellent and comparatively gentle introduction to the more severe operations which are to follow.

Having seated the patient in the chair, my assistant—a young lady, by preference, always—fastens around the neck a large napkin for the purpose of protecting the clothing from being soiled, often supplementing this with a light rubber apron if thought necessary, a precaution much appreciated by fastidious persons.

Lightly smearing the lips and corners of the mouth with refined vaseline to prevent chafing, I then proceed with appropriate scalers to remove from the teeth every particle of tartar or other deposits, being greatly aided by my assistant, who holds back the lips and cheek, and illuminates the mouth with a small mirror or the electric lamp, frequently washing the loosened accretions with tepid water from a syringe. A few drops of listerin or some of the analogous preparations added to the water give a grateful, soothing freshness to the mouth, sweetening the breath and rendering the operation more agreeable to all concerned.

My next step is to thoroughly polish all accessible surfaces of the teeth with a wheel-brush of suitable stiffness, run by the dental engine and charged with pulverized pumice-stone moistened with water or listerin. Should there still remain, as is often the case, persistent stains, I follow the brush with points of moose-hide, or rubber charged like the brush, and sometimes rendered more efficient by the use of a little tincture of iodin or peroxid of hydrogen. In extreme cases, where the stain is *very* persistent, I moisten the polisher with a drop of dilute phosphoric acid to much advantage.

All the exposed portions of the teeth having been cleansed and polished, there still remain the proximal surfaces scarcely touched, and these are extremely difficult to reach, especially if the teeth are in close contact. Having made sure of the possibility of getting at these with any polishing agent, however fine, by first passing thin metallic strips between the teeth, I then proceed to use fine tape or floss silk charged with the pumice-powder, drawing it back and forth with a sawing motion, and bending it to reach every part of the proximate surfaces.—*International Journal*, *August*, *1897*.

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DENTAL REMEDIES. By Dr. C. G. Edwards, Louisville. Read before Kentucky State Dental Association, June 16, 1897. Of the various groups of medicines, I shall treat only of those which we as dentists are the more directly and practically interested in.

Ergot, by reflex action, produces active contraction of involuntary muscle fiber; it therefore acts on and contracts the smaller blood-vessels, and its administration is indicated in persistent hemorrhage from the gums, and alveolar hemorrhage after extraction.

Cannabis Indica is like opium; in large doses, a narcotic poison, its effect is anodyne. As a topical remedy for preventing pain in extraction, I have used it for more than ten years with very gratifying results in many cases; its action, however, is not entirely reliable. It may be applied on pads of cotton to the gum on each side of the tooth for five minutes before operating; in all cases the gum should be dried before making the application.

Eucain.—The public attention which has been attracted by cocain renders it unnecessary for me to notice it here except by comparison with a new and rival substance called eucain. While cocain is an alkaloid of the leaves of coca, eucain is an artificial or chemical product. There is no chemical difference between the two substances, the only important physiological and therapeutic action being the difference in their toxic effect. I have used eucain for more than six months, and have extracted more teeth in that time than I had for several years previously. I extracted nine and eleven teeth, respectively, for two patients at one sitting, using two syringes full on each subject, one a lady of highly nervous temperament and light weight. The strength of the solution was 5 per cent. No unpleasant or toxic effect was noticed, and no complaint was expressed by the patient. Another advantage which eucain possesses over cocain is the greater permanence of the solution, and while cocain is decomposed by boiling the solution for sterilization, eucain is not. I have kept a solution of the latter for two months and found it as energetic as when freshly made, though in every instance I boil it before using. In reading very many recent reports from the pen of general and dental surgeons, I find expressed a universal and positive opinion in favor of eucain, as to its equal efficiency in pain obtunding power, and its very decided freedom from the toxic effects so frequently occurring with cocain. The only unpleasant effect so far noticed is swelling or puffing of the tissues in some cases, the swelling extending to the cheek or lip; this is unaccompanied by pain or inflammation and subsides in twenty-four hours.

Aconite is one of the most valuable of known agents in controling inflammation, as it lessens the force and frequency of the heart pulsation, lowers arterial pressure, reduces the temperature, stimulates intestinal, cutaneous and urinary secretions. In pericementitis, and in the early stage of alveolar abscess, especially when attended with high temperature, it is a valuable remedy administered internally until its physiological effects are exhibited. Watchful care must be observed in the administration of such a powerful depressant remedy. Aconite in conjunction with other remedies, notably iodin, is a well-known topical remedy for pericementitis.

Opium, a narcotic poison in large doses, and an anodyne, is unrivalled for relief of pain, and is a powerful aborter of inflammation. There is absolutely no remedy equal to it to relieve pain and induce sleep; by this action it controls nervous and vascular irritability. Opium also has sedative power when locally applied as well as when internally administered.

Papin.—Quite recently a preparation from opium has been introduced, called papin. It is said to have all the anodyne properties of opium, with the narcotic and convulsive elements eliminated, one fluid ounce being equal to one-eighth grain of morphia.

Ammonol.—Many new remedies for the relief of pain have been brought out, notably those derived from coal tar, salol, codein, phenacetin and ammonol being some of the principal ones, all of which possess sedative and pain-obtunding properties, and probably curative effects. Ammonol in ten-grain doses, repeated if necessary in an hour or two, has gained considerable favor for the relief of pain in pericementitis and alveolar abscess; curative properties are ascribed to it by some. If such is the case, it must stimulate and promote the secretions, especially the lymphatic glands.

Potass. Iodid.—There is another group of remedies, classed as alteratives; agents that produce waste of tissue, destructive metamorphosis. Their function is to modify morbid processes and aid in removal of abnormal deposits by stimulating certain organs and glands to increased activity. These include the salts of potassium, sodium, lithium, ammonium, and mercury. I have used potassium iodid as an alterative in the treatment of pyorrhea alveolaris with very gratifying results, continuing the treatment for weeks after the surgical and local treatment were finished. Potassium salts are diuretic and antacid, and are used especially in the treatment of diseases supposed to be due to insufficient oxidation of the blood-products or to deficient excretion.

Lithium carbonate and lithium citrate have become popular in the systemic and local treatment of pyorrhea alveolaris, as well as other affections supposed to be the result of deposits of the urates in the affected tissue, which is the case in the gouty diathesis.

Mercury has long been employed, not only as an alterative, but as a purgative in catarrhal conditions of the intestinal mucous membrane. It is a reliable purgative, and this therapeutic action is often desirable in threatened alveolar abscess. Its action on the liver, with its well-known stimulant action on the lymphatic glands, augmenting their elimination of effete products of inflammation, is a very important factor in controlling the disease and hastening its termination by resolution. *Items of Interest, August, 1897.*

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SIMPLE APPLIANCE FOR MOVING SINGLE TEETH. By O. W. Bedell, M.D., D.M.D., St. Louis. No matter how much we allow for complications, difficulties and accidents, I am convinced that in the majority of cases for regulating the operator is disappointed in not getting just what was originally planned, without consuming more time and having more trouble than was at first anticipated, especially in those cases of irregularity of the simplest class, where but one or two teeth are out of alignment, the remainder of the teeth in the same jaw, and the relation of the two jaws to one another being practically normal; those which look so simple and easy that no special apparatus is arranged for, and considerable difficulty is encountered. After meeting with a number of such cases, where some one or two of the superior anterior teeth were retracted out of line so as to interlock, closing behind the cutting edges of the inferior anterior teeth in occluding the jaws, and frequently being disappointed with results obtained with jack-screws, rubber-bands and ligatures, I tried the following little appliance with most satisfactory results: A band is made for either the second bicuspid or first molar, depending on the number of teeth to be moved and the relative amount of force necessary to accomplish the movement. These bands are made of german silver or other suitable material, and either have adjusting nuts or made to measure as a driving fit. A large-size wire, 8, 10 or 12 gauge, depending on the strength required, is then flattened by passing through the rolls until sufficiently thin to make a neat appliance, but still not so thin as to bend or spring too easily. This is then formed into an ideal arch extending from the bands on either side of the mouth and soldered securely to them. Holes are then drilled in the band exactly in front of the teeth to be moved, these openings being sufficiently large to allow the passage of a small-sized threaded wire. The teeth to be moved are banded with thin banding material, allowing the two ends to project towards the front, these ends being pressed tightly together by means of pliers. A short piece of threaded wire is split with a fine saw far enough to take in the projecting ends of the band. A perfect adjustment is made and the parts soldered, care being taken not to allow band to extend beyond the edges of the threaded wire, so as to prevent a nut being turned down against the band.

These bands with projecting threaded wires are firmly cemented to the teeth to be moved, the wires passed through the opening in the heavy arch band, and the entire appliance cemented in position. A nut is then turned down over the projecting ends until it rests tightly against the arched band, and all the surplus is cut away. The patients are supplied with a wrench and instructed to turn the nut up as fast as the tooth will move without soreness or discomfort until the correct position is obtained, and to call occasionally to have the surplus of wire, which would project beyond the nut and irritate the lip, cut away.

Rotation on the axis of the tooth may also be arranged for when required, by simply cementing the bands to the teeth to be moved in such a way that the attached threaded wire comes closest to the edge requiring the most movement.

These little appliances have given splendid results in several cases, one being a case in which five teeth were moved forward fully a quarter of an inch, and all at the same time. The advantages which I have found have been freedom from the pain and discomfort usually accompanying the use of rubber bands or ligatures; the firmness and accuracy with which the tooth could be moved, and the slight trouble to operator, as the patients did most of the regulating themselves.—*Items of Interest, August, 1897.*

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RELATION OF THE TEETH TO THE LIPS AND FACE. By A. O. Hunt, D.D.S., Chicago. Read before Illinois State Dental Society, May, 1897. The subject here presented is one that I have been investigating for a number of years and demonstrated repeatedly the conclusions arrived at in a practical way in the field of prosthetic dentistry. This investigation was based upon the belief that if the parts of the body had so many fixed relations to each other that other specialties had found a basis upon which to build, the teeth must also have a definite relative position to other parts of the head and face. If this could be shown it would relieve the dentist of many discouragements and assist the beginner in mastering the most difficult operations with which he has to deal. Instead of his being obliged to wait for eight or ten years, or it may be longer before he begins to feel any interest in the work or self-confidence in the field of dental prosthesis, a set or principles might be established as a basis, so correct that he could proceed intelligently in the construction of an artificial denture, and without fear as to the final results.

The methods followed by which the conclusions were reached were to make sets of plaster models of all classes of natural dentures, making at the same time and of the same individual two plaster casts of the lower half of the face, one with the features absolutely at rest and one where the teeth were closely occluded. Both being essential in the study of the subject, the casts of the faces made in these two positions show some widely varying conditions. Our interest is centered more particularly in the lower fourth of the face or the maxillary region, where most if not all of the muscles of expression concentrate.

The lips will demand our first consideration. I do not think it necessary to take up in detail each muscle and its function. You are all quite familiar with this. Into the orbicularis oris muscle anastomose all the elevating and depressing muscles; in the upper lip all but one are elevating muscles; in the lower lip all but one are depressing muscles. In the case of the one, the depressor alæ nasi of the upper lip, it is not so much a muscle of depression as one of eversion and inversion, that is, it will move the lip inward or outward, but not downward to any extent, while the elevating muscle of the lower lip has a very great function. In other words, it is with difficulty that the upper lip can be forced down over the lower lip, and in some cases it cannot be done at all; while nearly every one can raise the lower lip over the upper one, sometimes to the extent of touching the base of the nose.

The lips assume many forms. The full lip, the thin lip, the flat lip, the pointed lip, the full upper lip and thin lower and vice versa.

In fact the great law of variation is as constant here as elsewhere, and yet the change is never so great as to destroy the identity of the human characteristics.

The various changes of appearance are more apparent than real, as this appearance is controlled mostly, if not wholly, by the position of the teeth and shape of the alveolar process behind them. In following this investigation, if we expect to come upon anything that may be regarded as typical either in the arrangement, size, form or occlusion of the teeth, we are doomed to disappointment; outside of the fact that they are human teeth and cannot be mistaken, there is nothing else typical.

Let us first consider the cuspids, most important of all. They have a position distinctively their own, and but little variation is observed in that respect. In their development the position of the follicles is above the line of the follicles of the incisors or bicuspids. Their position is directly underneath the ala of the nose, between the fibers of the levator labii et ala que nasi and the levator labii superioris. In the process of development and eruption they retain this position between the muscles, and when finally in position the point is in a line with and directly underneath the outer margin of the alæ of the nose. The only cases where this is not true (and they are rare) are where in the premature eruption of the lateral incisor and first bicuspid the two latter have come into close contact at the interproximal space. If, however, this contact is not close and there is room enough for the wedge-shaped lingual side of the cuspid to gain an entrance, the cuspid assumes its regular position, crowding the incisors and bicuspids either within or without the arch, or in some cases causing them to rotate in their alveoli. Another instance where the variation may occur is where they erupt in the palate bones, or they may be locked within the arch by the occlusion of the opposing teeth.

The mesio-labial margin usually forms the turn of the arch. The labial surface is presented mostly to the buccal aspect. The central and lateral incisors, unless some of them are abnormal in size (which is not unusual), occupy the space between the cuspids. The variation in the relative width of the incisors is shown by the common irregularity as to alignment. It is very rare not to find them either slightly within or without the arch or some of them rotated in the alveolus.

The position of the bicuspids is that they are nearly hidden behind the cuspids, if the median line is taken as the center of vision. In every movement of the levator anguli oris and the risorius muscles, inward pressure is brought to bear on these teeth. This pressure is augmented by the action of the levator and depressor anguli oris muscles, as well as by the anterior margin of the buccinator in the act of opening the mouth. As the molars develop and erupt with the growth of the maxillary, they are further removed from the action of so many muscles which changes the conditions materially, They are at liberty to follow the law of individuality which dominates all forms and thus arrange themselves according to the temperament, whether basal or mixed in type.

The levator menti inferioris, the depressors labii inferioris and depressors anguli oris in the interlacing of their fibers present analogous forces to the muscles of the upper lip and cheeks, which operates to keep the inferior cuspids in their normal position.

The inferior teeth are not so likely to be malpositioned when the superior teeth are in their normal place, except at the time of eruption of the third lower molars.

In considering the lower teeth we find that the central incisors are always the length of the lower lip when the face is at rest. This is not likely to be the case in the relation of the upper lip and upper teeth. Any unusual growth of the intermaxillary bones or a roundness or fullness to the superior alveolar border will cause what we call a short upper lip. The lip is shortened because when it is lifted above the rounded or full border of the process there are no muscles that readily act to bring the lip down over it; so much of an effort is required to accomplish this that the individual rarely exercises it. The result is, that many persons do not close the upper lips when the face is at rest, while at the same time the teeth may be very nearly in contact and the occlusal margins of the superior central incisors are touching the inner edge of the lower lip.

The variation in the profile of faces requires that some standard be used to decide whether the lip and teeth are of the same length. If an instrument be passed between the lips at the parting, at right angles to the plane of the lower fourth of the face, it will touch the superior central incisors at a point corresponding to the occlusal edges of the inferior central incisors. If the teeth are separated slowly without disturbing the instrument or lower lip, it will be found that the point of the instrument will indicate the length of the lower teeth as stated.

The relation of the teeth to the lips and face are of such a positive character, that there could not be a good and beautiful face without a correspondingly good arrangement of the teeth. It is possible for a close observer to tell by looking at the outlines of a face, without seeing the teeth, whether any of the latter are missing or out of position, and which ones are so.

If in the construction of artificial dentures the principles as presented are noted and marked upon the wax used in taking the bite, and such other notes made as cannot be recorded on the wax, the element of guessing will be eliminated and the years of experience to obtain a good result will be shortened materially.

We have then the following as a summary: When the face is at rest the teeth are slightly apart. The occlusal edges of the central incisors are touching the inner margin of the lower lip. The cusps of the superior cuspids are in a line vertically underneath the outer alæ of the nose. The length of the lower incisors is the length of the lower lip.—*Dental Review, August, 1897.*

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SOME POINTS IN THE DIFFERENTIAL DIAGNOSIS OF PROTRUDING LOWER TEETH, WITH BRIEF SUGGESTIONS UPON THE TREATMENT FOR THEIR CORRECTION. By J. N. Farrar, M.D., D.D.S., New York. Read before the Dental Society of the State of New York, May 12, 1897. Protruding lower teeth are somewhat common, though not so common as protruding upper teeth, and, relatively, operations for their correction are not performed as often as those for the upper. The mechanical principles in all plans for shortening the lower arch, however, are the same as those for shortening the upper. In both the force is always applied so as to act in the posterior direction, the anchorage resistance being either the posterior teeth or the back of the head. Desirabode in his work in 1823, and later Harris in his work, recommended the former plan, while Fox recommended the principle in the latter plan. The mechanisms used at the present time, though similar, are far in advance of those prototypes.

When only a plaster cast representing protruding upper teeth or receding lower teeth is presented to a specialist for correction, and there are no other means of obtaining knowledge of the case, it is difficult if not impossible to determine to which class of deformities it belongs. But when the patient is seen it is comparatively easy. For illustration, if the patient is found to have too prominent an upper lip, and the upper incisors overhang a normally formed lower lip, or if receding lower teeth and lower lip are far behind a normally formed upper lip, it becomes easy at once to determine to which class the case belongs, and also easy to decide upon the plan of treatment to be followed. So it is in regard to protruding lower teeth and receding upper teeth. Plaster casts alone cannot be relied upon for determining to which class it belongs, nor can the plan of treatment necessary for their correction be reliable. The protrusion of teeth may be real or it may be only apparent. There is a deformity resembling anterior displacement of the lower teeth that is not caused by displacement of the jaw, but is caused by the body of the jaw (lower) being too long or by being abnormally formed at the angle. These are not caused by wrong proportion of the ramus, nor of the body of the jaw-bone, but by an excessive quantity of alveolar tissue in the anterior part of the jaw, associated with lack of quantity of such tissue in the side parts of the ridge. In some cases it is found that besides the disproportion in the quantity of alveolar tissue, the side teeth are abnormally short, the front teeth being normal or longer than normal. When either or both of these conditions are present, there is a corresponding difference in the plane of the antagonizing surfaces of the front and side teeth. Under these circumstances the side teeth cannot antagonize until the lower incisors rise up in front of the upper incisors, and more or less hide them from view. I have seen cases where the difference between the plane of the ends of the front teeth and that of the side teeth was fully one-fourth of an inch. In these cases the upper incisors are entirely hidden during occlusion by the rising of the lower teeth in front of them.

There are still other cases of abnormalities, resembling protrusion of the lower teeth, that are not caused by anterior displacement of the lower jaw, nor by too long or by abnormal curvature of this bone at the angle, nor by loss of side teeth, nor by too short side teeth or too long front teeth; in fact, the cause of the deformity does not lie in the lower jaw at all, but by the upper jaw being located so far posteriorly that the lower front teeth, in occlusion, are anterior to the upper.

Besides these cases of wrong position of the upper jaw, there is a small number of cases of deformity caused by the upper dental arch being so small that, although as a whole it is normally located, it occludes inside of the lower arch, the buccal walls of the upper side teeth touching the lingual walls of the lower teeth. These extreme conditions are rarely found, however, but there are cases of less degree of the deformity in which the corners of the third molars occlude, the remaining teeth being suspended free of contact. In either of the two last classes of cases the upper lip is so sunken that the deformity is generally regarded by inexperienced persons to partially, if not wholly, lie within the lower arch.

Treatment.—What the best plans are for the correction of these various classes of abnormalities is not a question of guesswork or simple opinion, but depends upon circumstances and conditions. The anterior displacement of the lower jaw resulting from loss of side teeth (thus permitting the two jaws to approach nearer each other than is normal) causing the front lower teeth to slide, scissors-like, upon the labial surfaces of the upper teeth, may sometimes be corrected by so grinding the front teeth that a part of the ends of these teeth will occlude and gradually slide each other into their proper relations.

When the abnormality, however, is caused by disproportion in the amount of alveolar tissue constituting the alveolar ridge, or by two short side teeth causing a difference between the planes of the antagonizing ends of the side and front teeth, it is found that the lower ones are generally so far anterior to the upper that grinding would not often prove beneficial.

If the difference between the planes of the arches is too great to correct by grinding, the teeth of the two jaws should be moved in the directions that will cause the best outlines of the face, and then force the proper occlusion by grinding the interfering parts.

For correcting a displaced lower jaw one of the best plans is by the use of gold thimble-crowns, cemented upon the side teeth; the heading of the thimbles being so inclined that by occlusion the lower jaw will tend to slide posteriorly.

In cases where the upper front teeth require to be moved forward and outward it may be done by causing absorption, or by springing the outer plates of the sockets outward until the best possible contour of the upper lip is accomplished. The object of this is not only to place the front upper and lower teeth in better relation to each other, but, if possible, to move anteriorly and make more prominent the bony foundation of the upper part of the sunken upper lip and the sunken alæ of the nose. This latter change, moving of the bone, however, cannot always be accomplished without injury to some anterior tooth. This arises from too great strain upon the lateral incisors.

In order to form the best outline or contour of both lips in such cases it is sometimes best, all things considered, to let the lower lip fall a short distance by moving posteriorly the lower front teeth. When there are no missing side teeth, it is sometimes necessary to extract one tooth on each side to permit the moving of the front teeth posteriorly. Occasionally, however, extraction of one of the incisors (lower), and closing the space thus made by forcing posteriorly the others, will suffice for this end.

To bring about the highest degree of facial beauty cannot always be done by following strictly the rules laid down for sculpture, where there is abundance of material and opportunity to obtain any effect desired; but the aim should always be to reach the highest possibilities toward harmony of all the features that the conditions of the case will permit.

For treatment of cases caused by upper jaw being too small, and of those in which this jaw is situated too far posteriorly, the operations are similar and consist of enlargement or the elongation of the upper arch, possibly associated with reduction in the size of the lower. This reduction may extend throughout the entire lower arch, or it may embrace only the anterior part.

Of course, as before implied, in all such cases the degree of defect in expression around the mouth and about the alæ of the nose should govern, in a measure, the extent of change in the position of the teeth. If extraction of any of the lower side teeth and the movement of the front teeth posteriorly would entirely obliterate the delicate curvature between the lower lip and the chin, this moving posteriorly of the front teeth should not be carried too far. In most cases, however, more or less moving posteriorly of the lower lip can be accomplished without entire obliteration of this esthetic curve. That is to say, the general expression of the face can be considerably, perhaps sufficiently improved by approximating the ideal outline of the facial features laid down by master artists, even though the full beauty of the curve in the lower lip cannot be secured. The correction of the apparent protrusion of lower teeth covered by a too small upper arch, or the arch located too far posteriorly, may be accomplished by screw-jacks or zig-zag wire bows worn within the arch, and so constructed as to bear against the lingual walls of the teeth, or it may be accomplished by a "long-band" worn outside of the arch.

Both kinds of mechanisms are anchored by ferrules, closed bands, or by clamp-bands to the side teeth. If this operation should tend to "scatter" the teeth, it is always prudent to watch the process closely, so that if the teeth tend to separate too far they can be prevented, and be compelled to move in directions that would keep at least ten of the anterior teeth nearly or quite in contact, leaving the sometimes unavoidable spaces made by enlargement of the arch so far back as not to be noticeable. Sometimes to fully accomplish this end in patients having large mouths it may be necessary to move forward one molar on each side, but such requirements are rare.

Should scattering of the teeth occur, resort may be had to the round wire long-band, having hook rings, to which the teeth may be connected by rubber rings in such a way as to draw them together. If the ends of the long-band are fastened to the side teeth by anchor-bands, leaving a space between the long-band and the front teeth, any direction of draught can be made without further use of radial screw-jacks. Of course, the long-band tends to force the molars posteriorly, but these molars will soon return to their former places after being liberated at the close of the operation. In the majority of such cases the moving of molars anteriorly is unnecessary, as the spaces unavoidably caused between the second bicuspids and first molars will, in the course of a few years, close by the natural forward movement of the molars. If it is necessary to move such molars by art, resort may be had to wedges.

Protruding Lower and Receding Upper Teeth Corrected by an Inclined Plane.—To show the value of an inclined plane, the case of a girl of about thirteen years of age is given. Her side teeth, molars, cuspids and bicuspids were very short, and although the roots were not fully developed, the side teeth had erupted sufficiently to occlude properly. The lower incisors, however, were more than an eighth of an inch anterior to their proper places and occluded anterior to the upper incisors, the wrong contact causing both the upper and lower teeth to continue to move each other still further out of place. The lower lip, as a consequence, was of course too prominent, and the upper one not sufficiently so.

The patient could by effort draw back the lower jaw so as to permit the edges of the upper and lower incisors to occlude, but could not draw it sufficiently back to enable the lower incisors to occlude posterior to the upper ones.

All that was necessary to give the short side teeth an opportunity to further erupt, and at the same time force the lower incisors backward and the upper ones forward, was to wear an inclined plane on the lower teeth. This plane was beveled to such an acute angle that all the incisors, upper and lower, moved at the same time oppositely.—*Dental Cosmos, August, 1897.*

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NATURAL APPEARANCE OF ARTIFICIAL DENTURES. By Carl Kniewel, D.D.S., Danzig. We usually hear our patients remark, "How readily one can detect an artificial plate," and seldom does one see a dental substitute which approximates nature. In most cases the dental forms as executed by the manufacturers present themselves in the same shapes as we see them at the depots, and the arrangement and position of the teeth are invariably faulty. The half-circle or horse-shoe dental arch always dominates. The color and size seldom correspond with nature—the dental substitutes are generally whiter and considerably smaller than the natural teeth, while the pathological conditions of the mouth are left unnoticed by the large majority of dentists. How unbecoming and painful it appears to observe in a mouth which still contains a partial set of natural teeth, whose several cavities have been filled with the various filling materials, the adjoining artificial ones off color and so illy positioned as to present a hideous contrast.

These several defects in our work can be easily avoided if we but stop to think and compare, and with diligence we can construct a dental substitute that will deceive even one of our profession, if we will carefully notice how nature has designed the dental organs and their adjacent parts. Select teeth sufficiently long as to admit of grinding them into such length and shapes as the case requires; do not be alarmed about grinding even the front surfaces, since the highly glistening surface of artificial teeth is a demerit rather than a desirable quality. In fact, the artificial teeth of to-day are unnatural in that they are baked to yield a glistening appearance. A diminution of this high glossiness is what we should hope to attain; by dipping artificial teeth, prior to setting, into hydrofluoric acid the surfaces become more lifelike. Select the color with reference to the complexion and age of the patient, and never permit the latter to lead you from the path of professional knowledge; rather choose a tooth somewhat darker than you first conclude—the teeth always appear lighter when placed in the mouth than they do when on the wax base-plate.

In the proper positioning of the teeth rests not alone the natural appearance but the utility of the denture. Instead of shaping the teeth on the wax base in the form of a half circle or horseshoe, have the cuspids form an outpost of an angle; the bicuspids and molars in a line with the outer angle of the cuspids, and not bulging out as usually seen. The anterior teeth should be so articulated as to seem more pitched (cutting edge towards the median line and the cervical or contact margin from the median line); the cuspid teeth should be prominently located, the laterals less so, while the centrals can be nearly as prominent as the cuspids. Avoid placing the anterior teeth in the customary half circle, as it is unnatural and prevents the case from resting firmly when in the mouth. In elderly people, where the gums have receded to a considerable extent, the artificial substitutes should have the same free cervical-margin. It will thus be strictly in harmony with nature and the dental artifice will be completely disguised; and if the artificial enamel is slightly ground off at such points as correspond with dental abrasions, the artistic effect is decidedly improved. We can make our work seem more natural by following nature and not by continually taking advice from our patients as to how the artificial denture is to be constructed. Let us teach our patrons to respect our knowledge of the art and science and our operations in a few years will materially assist in establishing in the public mind a higher regard for dentistry.—Translated by Dr. B. J. Cigrand from *Zahntechniche Reform, August, 1897.*

CARBOLIC ACID BURNS —Thoroughly wash hands with alcohol, when the burning and tingling will almost immediately cease. Unless employed immediately, however, the alcohol has no effect. When the time elapsed since the burning is too great for alcohol to be of value, brush burns with a saturated solution of picric acid in water.—*University Medical Magazine.*

Letters.

A PROTEST AGAINST PRESENT QUALIFICATIONS.

MANATEE, Fla., Sept. 2, 1897.

To the Editor of the Digest,

DEAR DOCTOR:—I will not undertake to determine at this time how the qualifications of candidates for certificates to practice dentistry should be tested, but I consider it my duty to declare against the abuses allowed in some of the states.

At the present time an applicant may answer a long list of questions on anatomy, physiology, chemistry, materia medica, etc., and thus pass the examinations and start practicing without a hitch, notwithstanding the fact that he may not, and in cases I know of cannot fill a tooth with any substance so that it will be in better condition than before it was filled. His plates, bridges and crowns are burlesques on prosthetic work.

At the same time, before the same board, a graduate of one of the best dental colleges of the United States, and a very fine operator, may be denied a certificate because he has been out of college so long that questions in anatomy which he has had no occasion to remember in actual practice have been forgotten.

Desiring that the above statement may not be obscured by a lengthy discussion of the subject, I will close by challenging a denial, although almost every observing practitioner realizes from facts coming under his notice that every word I have written is true. Respectfully, W. E. DRISCOLL.

ST. LOUIS LETTER.

Dear Digest: ST. LOUIS, Sept. 18, 1897.

Our St. Louis dentists are all at home again after their vacations, but the excessive heat during the first two weeks of September made us all long for the seashore or mountains, or whatever comfortable spot had rested and refreshed us. The electric fan made it possible to do most necessary work and everything that could wait was postponed for cooler weather. But the cool wave has reached us at last and we begin to live again.

Our new board of dental examiners held their first business session in this city last week and were the busiest people in town.

They received the diplomas or certificates of almost every dentist in the state who had already registered and was entitled to practice. They also examined a number of applicants, as well as some of the men who held questionable diplomas.

The board is doing its work in a most thorough and conscientious way, and the few prominent members of the profession in our city who were disposed to criticize the new law at the time of its passage, now openly admit that in the hands of the present board the law is an excellent one.

The many friends of Dr. H. H. Keith will be sorry to learn that he has been and is still very ill.

We are looking forward to some interesting meetings in our dental society, but the heat made the meeting in September a very small one. Cordially, ST. LOUIS.

NEW YORK LETTER.

NEW YORK, Sept. 17, 1897.

To the Editor of the Digest,

MR. EDITOR:—The suburbs of New York are being so intimately connected by the novel trolley system of railroading that one has to play a little on imagination to keep track when you are out of or in Greater New York. We found it so even up in Massachusetts, in the city of Springfield. It will not be long before one can take his grip and hustle, for it is hustle, from town to town and hamlet to hamlet, all along the line of travel from New York to Boston by trolley. It is a marvel how one is hurled along by these cars over the country roads. It is a choice delight to ride in the country "on a rail," and in open cars it gives a delicious breeze.

We are just fresh from many miles of this kind of outing, principally among the hills and dales of Hampden County, Mass., including the city of New England's choice attraction, Springfield, which we think is hardly to be excelled in all Yankeedom for more attractive homes. We have known this place familiarly for more than a half century, but have never seen so much to admire as during our last visit. It lies along the beautiful Connecticut River, and skirting all the western and northwestern horizon stand in picturesque grandeur the Berkshire Hills, known in all lands. Springfield is highly favored in locality for getting the best effects of this landscape, so changeable during the seasons. The city is one of hills with wonderful ravines in many directions, affording every description of location for homes of great variety and beauty, which brings out the most unique designs from the architects. Probably in no city has our government so elaborate and extensive grounds. This alone will afford the visitor rare diversion and give something of an idea what the United States is doing in the way of protection from foreign invasion.

Not a few of the erstwhile commoners have come to be some of the most substantial citizens and their residences attest their financial standing. The Wessons, famous everywhere for their fire-arms (invented to kill, as the original revolver was doubtful), are finishing a private dwelling costing into the millions, which has come from a small beginning less than three decades ago. Of course the majority of the homes come within the smaller range of finance, but there are many of them. There seems to be at this period an ambition to buy and build one's own home; even dentists that have heretofore not aspired in that direction have caught the fever. A new and very attractive public park has lately been added to the city by the generosity of Mr. Barney, of skate-manufacturing note, who by his labors has come into an immense fortune. The nucleus of this park was formed by the gift of Mr. Barney's private residence and very extensively cultivated floral landscape, costing hundreds of thousands of dollars. This is now at the pleasure of the public and will be a gift after his demise. Its beauty needs only to be seen to be appreciated. We thought as we gazed upon it that every dentist there could get daily inspirations for better things from it. We are sure that they feel a pride in it as an attraction for their city. These things stimulate pride. Already dentists have secured homes in this district. Dr. Stockwell, ex-editor of the *New England Journal*, has lately purchased an attractive cottage. Dr. Jared Hurlbut, well known, has one of the most attractive homes in Springfield, and has the advantage of more fortune than falls to the lot of most dental practitioners.

Dr. C. S. Hurlbut is one of the substantial practitioners. Dr. Ross has secured a clientage among the best people; he is also an ex-editor of the *New England Journal*. Dr. Morgan has his share of appreciative patrons. Dr. Bartholomew is one of the few who have become able to retire on the income of copper mines in Mexico. We found all the dentists busy. This is usual in all the inland places, for, be it known, not a few inhabitants of the larger cities seem to believe that dentistry is cheaper where they go summering. All right, so long as they think so. Now that we have a national association, we suggest that Springfield is a good place for a meeting.

Dr. Thomas Evans is again visiting his native land after twenty-one years' absence. He will find a large number of familar acquaintances gone since his last visit, especially one of note to whom he gave more than ordinary attention, the late Dr. Atkinson. He spent nearly all of one night in conversation with him, and when on his visit with the Empress Eugenie to the opening of the Suez Canal, he wrote Dr. Atkinson a long account of the affair, which was very gratifying to him. None of us is indifferent to these attentions and they are evidences of good purpose between man and man.

We do not covet Dr. Evans' great wealth, but we would use some of it, if we had it, for the benefit of our profession. Yes, we would establish and endow a school on the line expressed in our August letter. We were pleased to see that Dr. Marshall in the DIGEST has emphasized his thought in much the same direction.

Many of Dr. Bogue's friends will be glad to learn that he is on his feet again and off for a little sojourn in Europe. He tells us that the Stomotological Institute will give attention to Drs. Black and Williams at their October meeting. We have just learned that Dr. Leon Williams, of London, is on a visit to his native state, Maine, resting after the strain of his last two years in scientific work, which added to a busy practice has made it necessary.

The great American traveling dentist, Dr. Tenison, died suddenly in London, August 31. He is the noted traveler who has gone into all climes to show the marvels of mechanical genius in the placing of contour fillings, crown and bridge work. There is scarce a commercial center that he has not visited with his elaborate fittings for all classes of operative work. He entertained hospitably and made many friends. His latest achievements were aimed for Johannesburg, South Africa, where the multi-millionaires were awaiting his coming, but he comes not. Who will have the courage to step into this enterprising dentist's shoes and push on to South Africa? Probably there are few that could take up such an enterprise and make such a success of it as he did. It is said that he left a fortune in jewels. Dr. Tenison made his home in Brooklyn.

Prof. Fillebrown, president-elect of the National Dental Association, is rusticating at Diamond, Me. He is full of expectation for the new deal in dental matters—the establishment of the National Museum in the interest of dentistry at Washington. We suggest that could a duplicate collection be secured, like the one in the Odontological Society rooms in New York, representing odontology, it would be a beginning of great value from a scientific view. This offers a grand opportunity for a dentist with a modest amount of ducats. Choice libraries are already in the possession of liberal-minded dentists, and novelties, etc., are numerous.

The New York *Medical Record* announces a new phase of truth—"The cell is not elementary. An end of the century discovery." See page 354 of September 4 issue. This is emphasized as of great moment, having a bearing on every department of science. The above is from the report of the Moscow congress.

We notice that the dentist from St. Petersburg emphasizes his priority to Dr. Riggs. Not much! Dr. Riggs made his first public announcement at Boston in 1862 and gave a clinic in Dr. Hitchcock's office, and the following year gave a fuller statement at Springfield before the Connecticut Valley Society, which was largely reported by the public press of this city. We will add that if one understands the surgical treatment of the disorder, as described by Dr. Riggs, sulphate of copper plays no needed part. It is copper better adapted to the operator's pocket than to the diseased pockets.

Dr. George Field has been on a visit to New York from London.

Dr. Talbot and wife passed through New York recently en route from Moscow.

Dr. Catching's *Dental Weekly* has arrived in Greater New York. A bold project. We think a weekly could start from a large center, and if energetically managed on progressive lines, could come to a profitable existence. We have the New York *Medical Record* as an example. A good line of advertisements would support it alone.

The report from the White Mountains as a whole reads well. The photos of landscape are decidedly nice, but the Morton Boom started on the mountain top will look far different to those in the valley. That stock is below par and will ever remain so. All honor so far as it rightfully belongs, but no farther. Who is that fellow sitting in the notch? We surmise that he started the boom and cannot quite look his fellows in the face until he sees how it is going to take. We fully agree with Dr. Osmun in his views regarding the curing of pyorrhea, that it is a functional disturbance, so we think Dr. Rhein partly true and partly false in his ideas. There were such good photographers in the party we should have thought they would have given us a look at the entire party that was in attendance. Well, we think it very adroitly arranged and well worth 50 cents (to those that were there). Cordially,

NEW YORK.

BALTIMORE LETTER.

Dear Digest: BALTIMORE, Sept. 17, 1897.

As the moulting season is past and the activities of the fall remind me of my obligations, I recall the fact that Baltimore has not been represented in your journal for two months. During that time professional matters here at home have been at a pretty low ebb; a small white card on the outside of the doctor's door, announcing that he might be expected to return about September 1, indicated that many of the members of our profession here had the good sense and good taste to spend one or two months in a well deserved outing—why not? The city is practically deserted and there are always enough left to attend to those who happen to be in distress. And who can say that the dentist is not able to render better and more agreeable service to his patients after the stimulation and tonic which comes with vacation?

Some have spent the time in travel, enlarging their opportunities for observation and culture; some at the seaside, reveling in the luxuries to be found there; others in the mountains, among the lakes or in crystal waters of the brook, seeking a strike from a speckled beauty; or down in the lazy lagoons near the tide waters, in search of summer duck. Wherever they were, in the zenith of their pleasure if the question had been propounded, "Who's a dentist?" each might have appropriately deferred the answer till now and then let it be, "I am, and a better one for my outing." Not that I am in favor of concealing the identity of my connection with my beloved profession, but I firmly believe in forgetting the responsibilities and drudgery of life for a time.

The summer meetings are over and that which we longed for and worked for, the formation of a national dental organization, is accomplished. The unanimity of sentiment in its favor was, to say the least, most gratifying. After the meeting was over I overheard a few prophets predicting that it "wouldn't last a year." I commend to these wiseacres the philosophy in the reply of the venerable Mr. James Crow, who when informed that his horse would die replied, "Ef he dies I'll tan his skin and ef he lives I'll ride him agin."

It does seem just a little bit unfortunate that Omaha is so far away from the section that we are anxious to see cultivated, but then the west is certainly entitled to its share of favors, and we'll just have the wheels greased and in good running order when we get south.

I invite the attention of *our* state board of dental examiners to the fact that among the first work of the National Dental Association was the passage of a resolution requesting the state boards to have the laws of the various states amended, so that dentists registered in one state could practice in all states. The fairness of this proposition is apparent when we look at it nationally, and it is on this scale that the profession must be managed in the future. Pennsylvania's new law accepts the certificate of all states having like requirements, and many states recently have made similar changes in their law. Don't let Maryland be behind.

I learn from the secretary of the New York Institute of Stomatology that at last an effort is to be made to have Dr. Black's conclusions as to the liability of teeth to caries and the influences which tend that way discussed by members of the profession. There has not been much said, but I infer that some tall thinking is going on since these startling announcements, and I look forward with pleasure to this discussion.

We are to have a fall clinic and evening meeting of our society shortly. You shall have a report of it. For the present, good-bye.

ORIOLE.

ANOTHER LETTER FROM DR. KIRK.

PHILADELPHIA, Sept. 16, 1897.

To the Editor of the Dental Digest,

DEAR SIR:—I see by your August issue that your hysterical Quaker is exhibiting further symptoms of his pathological condition. The manifestations are now of another class, but highly characteristic of his disorder, i. e., instead of ill-natured ravings he indulges in willful perversions of the truth, albeit his aforesaid ravings were more or less characterized by the same latter tendency.

He asserts that "a certificate from the demonstrator of the college from which a student graduates will be accepted as evidence of his manipulative ability" under the new dental law of Pennsylvania. This is absolutely false, a perversion of the facts to put it mildly.

The law upon that point is as follows: "Each applicant shall also furnish to the board satisfactory evidence of his or her proficiency in the manipulative procedures of dentistry, either by producing an example of his or her work, duly attested by the demonstrator in charge of the clinic of the college issuing his or her diploma, or by a practical demonstration of his or her skill in the presence of the examining members of said board."

The attestation required from the officer of the college is that the work presented is genuinely the work of the applicant; the board have power to decide whether the work evinces proficiency in the manipulative procedures of dentistry, and should it not, may then require the applicant to perform the work before them, which is a very different thing from the case as stated by Quaker. Considering the elaborate facilities usually provided by state boards for enabling applicants to perform manipulative work in dentistry, such a provision may seem superfluous to Quaker, but times change and a tenpenny nail no longer answers the purpose of a plugging instrument nor a paving block the requirements of a swaging apparatus. Moreover, it is becoming recognized that the applicant for a dental license has certain human rights as well as a dental examining board, and the clause in question is merely a step toward equity, so far as Pennsylvania is concerned in the matter.

Quaker seems to be inclined to make big eyes at what he considers the extreme qualifications required of a licensee under the Pennsylvania law, and implies that the "mechanical skill and manipulative ability," upon which in his view the reputation of American dentistry is founded, is being pushed into a dark corner. Following is the list of branches required to be taught in all American colleges desiring recognition by the National Association of Dental Examiners—Operative Dentistry, Dental Prosthetics, Dental Pathology, Oral Surgery, Anatomy, Physiology, Chemistry, General Pathology, Materia Medica, Therapeutics, General Surgery, Bacteriology. A requirement practically the equivalent of that prescribed by the Pennsylvania law. But perhaps Quaker is a so-called "practical man" who doesn't see any need for culture beyond his fingers.

Now as to the "loophole." Already several would-be practitioners having the same kind of astigmatism which Quaker manifests have tried to take advantage of the phantasmagorian "loophole" which they saw in the Pennsylvania law; but there was no hole, only the loop, and that caught them where loops have frequently embraced more advanced members of their class, so we are mercifully preserved from inundation by Quaker's hypothetical army of "artisans, carpenters, blacksmiths and cobblers."

No, if the Quaker sore spot still continues to provoke these evidences of reflex disturbance, and the Famous Vegetable Compound has not brought relief, a season of rest and quiet may help, if not the sufferer, at least those who are within reach of his twaddle.

Yours truly, EDWARD C. KIRK.

BEDS FOR SICK AMERICANS IN LONDON.—As a memorial of the Queen's diamond jubilee, the Americans residing in England have endowed a bed in perpetuity in each of the five leading London hospitals, each bed being endowed with the sum of £1,000. The beds will be especially for the use of Americans, but other patients may be received if all the Americans are well. *Medical Record.*

TOOTHACHE.—Phosphorated oil is claimed as a sovereign remedy in removing pain from a carious tooth. The cavity being cleansed, a few drops of the oil on wool are packed into the part and covered in with gutta-percha. The pain is quickly removed, and the plug may be left in for some days. The phosphorated oil is prepared with one part of phosphorus dissolved in about eight parts of expressed oil of almond.—*Practical Druggist.*

SUPPOSED NEW FUNCTION FOR THE BILE.—Professor Fraser, of Edinburgh, in his investigations into the venom of serpents, has brought forward the theory that the bile, in addition to being an important excretion, removing waste products from the body, promoting the absorption of fat and acting as a laxative and antiseptic, has also the additional function of rendering inert many organic poisons introduced into or generated in the alimentary canal. He states that he has introduced serpent's venom into the stomach of an animal without producing any injury, even when the quantity was so large as to be sufficient to kill 1,000 animals of the same species and weight if injected under the skin. This he finds is due to the anti-venomous action of the bile. The bile of the poisonous snakes themselves seems to possess the greatest anti-venomous properties, and by mixing the venom and bile of the same snake, such as for instance the cobra, rattlesnake or puff adder, and injecting the mixture under the skin of an animal, the action of the poison was neutralized and no ill effect ensued. In fact, the bile is such a powerful agent that a quantity less in amount than the venom is often sufficient. The bile of non-venomous animals, such as the ox, is only one-seventieth as strong as that of the venomous serpents named.—*Brit. Jour. Dent. Sc.*

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

LACK OF HARMONY AND COOPERATION.

How general the criticism is of the action taken by the National Association of Dental Examiners at their last meeting, we are as yet unable to decide, for we have not read the entire report of that meeting, only a part of which has been published in the DIGEST, and therefore withhold any comment at present.

Thus far all the unfavorable criticism has come from the Quaker City, but there has been enough to create the desire to learn the facts. We have always insisted that the National Association of Dental Examiners must be the power for good in regulating the standard of qualifications of those entering the profession. This must surely be the outcome if they manage their work properly and secure the cooperation of all the state boards. We will, however, not enter into a lengthy discussion of this most important subject until a later issue.

LITERATURE OF THE DENTAL PROFESSION.

The beginner in our profession to-day has much for which to be thankful. In recent years there has been a great increase in the nnmber and improvement in the character of the books on all phases of dentistry. The profession has made amazing strides along this line, and it is vastly to the credit of our literary men that they are willing to write for posterity from the fullness of their wisdom and experience. A few years ago dental literature was very meager and the student was obliged to rely almost entirely upon oral lectures and his own observations. To-day all branches of the dental art have been ably treated in book form and our periodical literature is upon a high plane of excellence and efficiency.

We have recently received the following works: Richardson's Mechanical Dentistry, edited by Dr. Geo. W. Warren, Philadelphia; The American Text-Book of Operative Dentistry, edited by Dr.

Edward C. Kirk, Philadelphia; The American Text-Book of Prosthetic Dentistry, edited by Dr. Chas. J. Essig, Philadelphia; Gray's Anatomy, Descriptive and Surgical; The Practice Builder, by Dr. Chas. R. Hambly, Cincinnati; Loosening Teeth or Chronic Alveolitis, by Dr. Henry S. Nash, New York; Injuries and Surgical Diseases of the Face, Mouth and Jaws, by Dr. John S. Marshall, Chicago; and we shall in the near future give reviews of all of them.

WHAT SHALL OUR FUTURE BE?

By the time this reaches our readers the numerous dental colleges throughout the United States will have selected from the many applicants those who are to make up the yearly addition to the dental profession, and the important question arises—What shall the character and qualities of the admitted students be?

We say important question, and it certainly must be considered important, for the future standing of our profession depends in a great measure upon the kind of material admitted to our colleges each year. And it should be remembered this is left entirely with the colleges themselves, collectively or otherwise.

We have called attention to the fact before, that young men wishing to become dentists now make application direct to the colleges, and the conditions are not as in former years, when a student was required to have one or more years' apprenticeship in a private office before being admitted to a college.

When this was the rule the responsibility of selecting the young men who were to make up the profession devolved upon the practitioners themselves, and as the students' characters and qualifications became known the preceptors were able to advise or decide as to their fitness.

At the present time, however, great numbers of students make application direct to the dental colleges, and it makes one shudder to think of the responsibility which of necessity the heads of our schools must assume. It is true that the College Faculties' Association did not abandon all rules for governing the entrance of students, for these resolutions were adopted at their last session:

Resolved, That the minimum preliminary education requirement of a college of this association shall be a certificate of entrance to the first year of a high school or—in states that have no high school—of graduation from a grammar school, or its equivalent, to be determined by an examination.

Resolved, That nothing in the above shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

We do not quite understand the meaning of these rules, nor can we see how the examination spoken of can be made with any great degree of intelligence, but this is not our responsibility, for which we are very thankful. We merely call attention to the question of the present method of selecting students, for the purpose of suggesting an amendment to the plans now in operation. This is, that no student shall be admitted to any college who has not been previously examined as to his fitness by a reputable practitioner of dentistry.

The professional standing of this practitioner should depend upon his belonging to a reputable dental society, and the good repute of this society should be dependent upon its being represented in the National Dental Association.

In this connection we commend to our readers the thoughtful address of Dr. C. N. Johnson, which will be found on p. 540 of this number of the DIGEST. Dr. Johnson clearly defines the responsibility of the dentist to his patient and his profession. In these days of lax commercial morals and questionable professional ethics, there is need of constant vigilance on the part of leading practitioners to hedge the profession about with all the safeguards possible. Nothing should be done to harass the honest and capable student or impede his course, but irresponsible and incompetent students should be prevented from breaking into the profession at all hazards.

Notices.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

REPORT OF THE COMMITTEE ON NECROLOGY, AT OLD POINT COMFORT, ON THE DEATH OF DR. FRANCIS PEABODY, OF LOUISVILLE, KY.—Whereas death has taken from among us Dr. Francis Peabody, of Louisville, Ky.; and whereas we feel that in his death the profession has sustained the loss of an able practitioner and teacher; therefore, be it resolved, that we tender to his bereaved family our heartfelt sympathy, and that we cause the resolutions to be entered upon the minutes of this association, and be it further resolved, that a copy of these resolutions be sent to the dental journals for publication.

REPORT OF THE COMMITTEE ON NECROLOGY, AT OLD POINT COMFORT, ON THE DEATH OF PROF. FRANK ABBOTT, OF NEW YORK, N. Y.—Whereas death has removed from our ranks Prof. Frank Abbott, of New York, and whereas on account of his social qualities, his genial companionship, and his ability as a practitioner and teacher of dentistry, we realize the great loss to the profession in his death; therefore, be it resolved, that we tender to his family the sincere sympathy of this association, and request that these resolutions be spread upon the minutes of the association. And be it further resolved, that a copy of these resolutions be sent to the several dental journals for publication.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(*Continued from page 527.*)

Dr. Donnally: What do they put down as the preliminary requirements?

Dr. Faught: That is all they state.

Dr. Donnally: You commenced by saying "these requirements may be modified."

Dr. Faught: But that is all they give. However, I will read it right through: "Matriculants will be required to show, either by examination or by exhibiting a diploma or certificate from some reputable institution of learning, that they have received a good English education." That is all they state, and it is a mighty broad gauge upon which to run.

We have another college here which typifies another form. It says: "Applications for admission should be made in writing; the applicant must be conversant with the English language and give satisfactory evidence of having received a good preliminary education." That is all. As offsetting that I have the announcement of another institution, which gives as its preliminary requirements something that will simply astonish you. It may be much higher than we wish, or it may not be so high; but it is to be published in the very beginning. It is substantially what the faculties have published, in their report of proceedings in 1896, as adopting. When a student gets this prospectus he says, "Here, I am not up on these things," and he does not go to that school. I refer to the College of Dentistry of the University of California. There are a few colleges which have done that, and a few of those on our recognized list. They publish what I have just read to you, or that they demand the requirements of the National Association of Faculties, and do not say one thing about what these requirements are, so that the student does not know until he gets a letter. We do not know to-day what they require; they are holding up one standard in the printed report of their proceedings before the profession, and they are putting before the public, to whom they are looking for students, something that we do not know anything about.

Mr. Meeker: I move that the requirements of the California college be read.

Dr. Brown: A short time ago Dr. Faught and myself had a conversation with one of the members of the Faculties' Association and we asked him point-blank what the requirements were. He said he did not know; he believed there was something brought up at Saratoga as to the requirements and voted down, and brought up again and voted on, but there was some kind of a clause to it, so that they could do something else this year. There is a dean of a college who does not know what the requirements of his own association are.

Dr. Donnally: Suppose we send word to the Faculties' Association that we have this matter under consideration, and ask them what their requirements are.

Dr. Chappell: It seems to me we should require that they publish in their announcement what their requirements are.

Dr. Faught: We cannot require that.

Dr. Chappell: The National Association of Faculties ought to take action upon a college which does not. I know personally of one college which advertised some years ago that it was necessary to have a diploma from a literary university, a high school, or a thorough academic course, or that they should undergo a preliminary examination for their academic studies. You will find some of these colleges to-day do not have any requirements at all.

Dr. Faught: I am quite convinced of it. It is believed they do not desire them.

Dr. Chappell: They do not desire them. Why? What they wish is students, and by the hundred.

Dr. Edwards: If they have proper requirements they will bar a great many. I should like to hear Dr. Faught read the requirements of the California College.

Dr. Faught then read the requirements of the College of Dentistry of the University of California:

REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be eighteen years of age, must present to the faculty satisfactory evidence of a good moral character, and must be examined as to his previous education and fitness to appreciate the technical study of dentistry.

In order to secure a release from this examination, the candidate must present his diploma or certificate of examination or graduation.

Graduates and undergraduates of medicine desiring to qualify themselves for the practice of dentistry will be governed by the following rules of the National Association of Dental Faculties:

Resolved, That after the session of 1890-91 a diploma from a reputable medical college shall entitle its holder to enter the second course in dental colleges of this association, but he may be excused from attendance upon lectures and examinations upon the following subjects: General Anatomy, Chemistry, Physiology, Materia Medica, and Therapeutics. (Excelsior Springs, 1890.)

Resolved, That the candidates for admission to the colleges of this association who are undergraduates in a reputable medical college may be admitted to the junior class, subject to the rules of examination governing admission to that class. (Saratoga, 1891.)

Candidates for admission to advanced standing will be governed by the following rules:

Resolved, That the colleges of this association may receive into the junior or senior classes only such students as hold certificates of having passed a satisfactory examination in the studies of the freshman or junior years, respectively; this certificate is to be a pledge to any college to which they may apply that a previous year has been properly spent in the institution from whence they come. (Chicago, 1885; changed, Saratoga, 1891.)

Resolved, That applicants for admission to advanced standing from foreign countries shall be required to furnish properly attested evidence of the study, attendance upon lectures, etc., the same as required of applicants here, and they shall pass the intermediate examinations. (Chicago, 1885; changed, Saratoga, 1891.)

In accordance with the foregoing, this college will admit students to advanced standing who hold certificates from colleges belonging to the National Association of Faculties that exact a like standard of entrance requirement and curriculum.

Beginning with the sixteenth session (September 6, 1897), this college will adopt the following rules governing admissions:

MATRICULATION EXAMINATION.

Students desiring to matriculate are required to undergo examination for admission in the following subjects.

1. English. This examination will presuppose a study of English and

American literature equal to that pursued in the first year of a high school course. Every candidate will be required also to write an English composition of not less than 200 words, correct in spelling, punctuation, capital letters, grammar and paragraphing.

2. Physics. An amount represented by Avery's Natural Philosophy, or Gage's Introduction to Physical Science.

3. Latin. Refer to Smith's Principia Latina, Part 1, or an equivalent.

4. Elective Subjects. (a) For the session of 1897-1898, according to the announcement, each candidate must also pass an examination in two of the following subjects: Chemistry, French, German, Elements of Algebra, Plane Geometry, Botany or Zoology. (b) For the session of 1898-1899, and thereafter, the elective list includes many more subjects (see page 16), and each applicant must pass an examination, as follows, in addition to the required subjects: For the sessions of 1898-1899 and 1899-1900, in three required and four electives. For the session of 1900-1901, in three required and six electives. For the session of 1901-1902, and thereafter, in three required and nine electives.

At least one year's work should be spent on each of these branches before examination. Conditions imposed at the entrance examinations must be removed before the end of the session.

Applicants intending to take this examination are advised to review their studies before doing so.

In lieu of an examination, the following certificate will be accepted from any of the schools accredited by the University of California at Berkeley.

This certificate is the one adopted in August, 1896, by the National Association of Dental Faculties, slightly modified to suit the advanced requirements of this college.

Dr. Faught: Then they have a blank form of certificate of study, together with the various groups of studies, if you desire me to read them.

The President: I think that is hardly necessary.

Dr. Faught: They are all grouped out; it is a very high standard, and they publish a list of their accredited schools.

Dr. Edwards: I would like to ask Dr. Faught if he has any evidence that that school actually imposes those requirements.

Dr. Faught: It is my belief that they do, or will, as these requirements have just been adopted.

Dr. Moore: One of the professors in that college, in whom I have every confidence, told me they do.

Dr. King: Does that include all that is required by the National Association of Dental Faculties?

Dr. Faught: Yes, and a little more.

Dr. Chappell: They accept certificates, do they not?

Dr. Donnally: It says somewhere that they interchange with other colleges, etc , and then it goes on and gives a list of those colleges and says "or equal."

Dr. Faught: No; it gives a list of the colleges in California the certificates of which will be accepted. It is simply their own schools, that is all.

Dr. Faught again read the proposed new rule No. 2, and it was moved and seconded that the same be adopted.

Dr. Moore: I would add the words after "prescribed by the National Association of Dental Faculties," "adopted in 1896," otherwise it leaves the bars down.

Dr. Faught: Yes, we know that; and we know this, that some of the faculties had a conference in Chicago in the middle of the winter, at which they discussed lowering the standard, and there is probably going to be action taken here.

Dr. Moore: I make that amendment because I don't want the bars let down.

Dr. Faught: I wish to be extremely conservative here. The reason we put that as we did was because we recognized that while it was extremely desirable to keep it up, yet if they let it down a little bit, but did not weaken it in its structure, we would be in trouble during the following year unless we put it in this way, because we would have to leave colleges out of our list, which it might not be necessary to do unless they come down almost to nothing.

Dr. King: I thing it will be best to defer action on this until we learn the standard they adopt at this meeting, before we adopt any standard.

Dr. Moore: If our committee goes to the Association of Faculties and meets their committee after this rule is adopted as I propose to amend it, they can confront them with their own action, their own rule, and they certainly cannot complain. It is a rule that they adopted themselves voluntarily. They considered the question and adopted it. We are modifying our position a great deal in many instances, and why can we not take their own action and say that this is what they want and are going to have? We can do that by inserting those words, "Adopted at Saratoga in 1896," and then they cannot complain. Those in the Association of Faculties who wish, as I believe the majority of them do, to keep up the standard, will have their hands strengthened by this action. They can say "The Association of Examiners have modified everything but this, and here they take what we have done and do not ask anything more than we have offered ourselves." It will save them and us trouble, and it will enable the men in the Association of Faculties who are trying to get at a high standard to do so. If anyone tries to lower the bars the others will say, "The examiners have agreed to what we ourselves adopted."

Dr. King: When our committee meets there to confer they will probably find that action has already been taken and their rule modified; then where are we? Let us find out where they are and then go ahead.

Dr. Moore: We do not know that they have or will. We do know they took that action in 1896, and all we will require is that the standard be just as they fixed it.

Dr. Clements: Is that standard of 1896 where we can get it and have it read?

Dr. Donnally: I would like to have Dr. Moore tell us what we are going to do about it when the colleges say we have lowered the standard. We could not enforce that in our own association. We could not hold our own college in line on the preliminary requirements laid down and what can we do if we try to enforce a thing which we really cannot? While we ought to endeavor in every way possible to get them to raise the standard and support them in it, we cannot do more than exercise moral influence, and if we are going to cut them out—Dr. Moore's motion amounts to a declaration that we will simply just wipe them off the list and not have any list at all.

Dr. Brown: Dr. Moore is right, and I think the other side of the question is right, too. But the whole matter hinges on the fact that if we put in "according to the standard of 1896," as we did have it originally, it may result in throwing the whole clause out, because there may not be any rule of 1896. It is a question whether those rules were adopted at that meeting.

Dr. Moore: Do not the proceedings of the Association of Faculties show that they were?

Dr. Brown: Not fully. It is understood they are to be ratified at this meeting. There is a string of some sort hitched on to those rules. I think we shall have to leave that in the hands of the conference committee, who can handle it and see to it that the standard is not lowered.

Dr. Noble: I am willing to leave it with our chairman.

Dr. Clements: I would like to know if the majority of these members understand what the rules of this faculty are? I don't understand it; I have got it here before me, but have not a chance to look it over, and I am of the opinion that a great many here do not understand what that rule is, and it is impossible to act on a thing unless you understand it. I for one, before I vote on this subject, would like to know what it is, and if the secretary will explain it we can act upon it more intelligently. As I understand, the motion now is to take the rule of the Faculties regulating the admission in colleges on preliminary examinations; there are Latin, Greek, French, etc. If that is the case you won't get any student in the south to go through that examination, because in our high schools we do not teach those branches. We go to a certain height and no further, and if you take in Latin, Greek, German and French it bars us out entirely, so far as students are concerned, in entering these colleges, and I would like to know if the majority of these men here understand exactly what the rules of the faculty are? I have heard some little discussion on the outside, and my individual opinion at the present time is that the requirements are too high, and I would like a little further explanation of this subject before voting on it.

Dr. Friedricks: I come from the south myself, and I know that in the preliminary grades of the high school at New Orleans Latin is taught, and Greek, French and German in the second grade. Yes, and I believe they throw in music, so that if a man had to pass an examination in music, besides Greek and Latin, if he were from the high school of New Orleans he could get in. So it will not bar all of the south, as our friend says, and he must be talking for Mississippi!

Dr. Faught: I wish to bring very clearly before you the point that we do not know what the preliminary requirements of the Faculties' Association are. I have never been able, during the time that I have been in this committee, as its chairman, to make them tell me definitely what they are, and I have never been able to have them published and sent forth to the profession. I have become intensely disheartened in my efforts to look into the new institutions which are making application. That is the reason we have not our report complete, because we are unable to determine regarding the preliminary requirements for those institutions, and until we get that information we cannot properly act upon those applications, for I am opposed to admitting any more colleges upon our list who do not state, plainly and above board, what their preliminary requirements are, so that we shall know. At the same time we must get that from the Faculties' Association and have them put down in black and white what they do require, so that we can act on some basis. The trouble has been all along that they say one thing and do another. Yes, they do twenty things instead of one thing, and they all look out for each other and approve of each other, and if any inquiries are made they say, "O yes, he's in our association and he is all right." But he is not all right. I look into it and find that he is not doing what they say. I have worked at it for a year and I cannot make head nor tail of it.

Dr. Chappell: Here is another announcement: "This college belongs to the National Association of Dental Faculties and conforms to all its rules and regulations." That is all its requirements.

Dr. Clements: I don't believe there is one out of a hundred students who could come up to the standard of the preliminary requirements as I read them. I know of boys in my county and town who have entered the best colleges in the United States and yet are not up on some of these subjects, and I think it is useless to put in the preliminary examinations things that these boys cannot pass, and so make it necessary to tell a lie to get them in.

Dr. Donnally: I feel assured that Dr. Clements does not understand. (Dr. Donnally then proceeded to explain the method of preliminary examinations, the number of counts each study represented, and that certain studies were elective.)

Dr. Moore: My point is just this. I do not propose to go into all these different subjects, or into what this association proposes to do about each one of them, but I do propose that we shall take what they have done as being done in good faith. I represent a southern state too, and we have in our state just as good educational institutions as they have anywhere on the face of this continent. We have a dental department in a university college in Richmond, the standard of which is going to be as high as any on the continent. Just so long as that university department has its present faculty a member of the Virginia State Board can go to the provost of that college and say to him "your dental department is not doing its duty," he will see that it is done. The Faculties' Association adopted this standard; they sent it out to the world, and we have no right to go behind it and say that they meant, or are going to mean something else. Our duty is to take it in good faith and not imagine that they are going to change it. It has been sent to all our colleges and to our boards, and anyone who will study it will soon understand the whole thing. All I wish to say is, that we adopt the standard adopted by the Association of Faculties in August, 1896. No one can complain of that; they cannot complain and say that we are not acting in good faith, or seeking to put anything upon them that they have not put upon themselves. That's what I wish and I desire to be able to go home and say that we have done that.

Dr. Edwards: Is their standard, then, as was read in the California catalogue?

Dr. Moore: No, this paper I have here is the report of their meeting at Saratoga in 1896.

Dr. Edwards: Do they state in there what shall be the curriculum?

Dr. Moore: Yes, but I don't propose to read it. We can do that at home.

Dr. Edwards: A great many here do not know what it is.

Dr. Moore: There are eight pages of it, of their rules and regulations, and I propose that we take it as it is.

Dr. Donnally: What shall we do if we fail to enforce it? There is not a single college which stands up to it.

Dr. Moore: We will report to the Association of Faculties, "Here is a college that does not stand up to your rules."

Dr. Donnally: They will authorize them perhaps at this meeting to lower it. It has been explained that they had a meeting looking to that end at Chicago, in which fourteen colleges were represented.

Dr. Moore: Well, they were not the whole association. All I wish is to show them that we believe they were acting in good faith when they adopted these rules, and that we have no suspicion of them at all and are willing to yield everything, and take the standard they have adopted.

Dr King: Were those rules really adopted?

Dr. Brown: I would like to second Dr. Moore's motion. I think, after hearing his remarks, that it is the best thing to do. I had a conference with a dean of one of our principal colleges a short time ago, and he assured me there was no intention of lowering the standard; he knew nothing whatever of this conference that had been held in the west, was not in favor of any such thing and knew it could not be carried through. He is a prominent man and on the conference committee. Let us take the standard that they made at Saratoga last year as having been done in good faith, and go to them as accepting that standard, and I do not see how they will get away from it.

Dr. Moore: I wish to treat them as I wish every man to treat me? When I say I am going to do a thing I am going to do it, that is, I intend to, but I may not be physically able or mentally able; and I wish my brethren to take me at my word, and that is the way I treat other men, until I see they do not do what they promise.

Dr. Chappell: I am satisfied that all understand we wish to abide not only by the written code, but by the unwritten code of rules among men. I think we ought to have an amendment there to say that the colleges shall include a statement of the rules and regulations in their announcements.

The President: The first question is on the amendment of Dr. Moore.

Dr. Chappell: The simple fact is, some publish it and some do not, and the student, looking for a college, says, "Here is one that makes no provision whatever; I will go there."

The President: Are you ready for the acceptance or rejection of the amendment of Dr. Moore? Please state it once more.

Dr. Faught: The rule as suggested by the committee is, "The preliminary requirements prescribed by the National Association of Dental Faculties shall be the standard accepted and required by the National Association of Dental Examiners."

Dr. Moore: "Adopted by the National Association of Dental Faculties at Saratoga, in August, 1896," is what I wish to add to it.

Dr. Edwards: I would like to vote intelligently upon that subject, but I cannot without some further explanation, and I am sure there are others here who are just as much in the dark as I am. If I understood Dr. Faught right, he said that he did not know after a year's investigation what the requirements were, and from what Dr. Moore and others have said, they seem to have some requirements in their pamphlets, and it seems to me there must be some specific requirements. Do I understand the catalogue sent out from the California college, requiring so much, is accepted as the requirements adopted by the Association of Faculties at Saratoga last year?

Dr. Faught: Yes, that covers everything that they did and a little more.

Dr. Edwards: But in the main?

Dr. Faught: In the main, absolutely and specifically.

Dr. Edwards: If that is the case I do not believe, if they had a string to it, they will regard that this year, and anyway, as my friend from Mississippi said, I do not believe they will live up to it, and I think we could not require them to if we tried. If it is anything like what you have read from the California pamphlet, if it covers one-half of it they will not do it. There is no man who will go higher than I will to reach a standard, but if it is one half of the requirements you read, one would have to be familiar with almost every tongue, and I do not believe it will be done.

Dr. Parmele: But it does not require all of them.

Dr. Clements: Is this the New York standard?

Dr. Faught: Practically.

Dr. Clements: I have heard two or three men from different colleges say that it is an absolute impossibility to live up to it. Here is my position exactly, that if we say we require such and such an examination, and these men do not require it in their colleges, what are we to do? If you investigate the matter closely you will see there is not a single college which will live up to it, and it is useless for us to take the same standard that this Association of Faculties does and then not have them live up to it.

Dr. Meeker: If we do not adopt it we are going backwards. The whole evolution of education is forward in everything—in mechanics, in dentistry and in general education. All that is required is that this association adopt what the Faculties' Association say is their standard. We take them in good faith, and if they go back on it we ought not to worry. It will be their doing. I recognize the position our friend from Mississippi takes; still that does not alter the question that all we can do is to adopt what they say. We have no specific proof that they will go back on that. I wish to do only what is right.

Dr. Parmele: We are not exactly taking what they say only, but we are asking them to live up to it.

Dr. Edwards: As I understand Dr. Brown, they have a string to that resolution, for I understand that they have to be familiar with Latin, Greek and German.

Dr. Meeker. No; that is what the California college says.

Dr. Finley: We are probably going to be in session for two or three days and this conference committee will report back. Is it not possible that we should adopt the amendment of Dr. Moore, and then if they refuse to stand by it, cannot we change it?

The President: Certainly.

Dr. Finley: Let us go as high as we can, and then if we have to change it, let us do so. I do not think it will be very hard for us to take back a little, for we have already taken back a great deal, but let us go as high as we can.

Dr. Barrett: Has not the committee on conference the power to act?

The President: No, they report back their action to this meeting. The question now is on the amendment of Dr. Moore.

Dr. Barrett: I wish the stenographer would read the language of the motion appointing the committee on conference.

The President: Do you understand that this body is bound by what action their committee may take?

Dr. Barrett: So I understand.

Dr. Donnally: I can understand how the association would reject the report, but I understand that the committee has power to act.

A vote was then taken upon the amendment of Dr. Moore and the same was adopted. Thereupon a vote was taken upon the adoption of rule 2 as amended, and the same was adopted.

Dr. Brown: Before we go any further I would like to understand exactly what Dr. Donnally said in his last remarks. That the conference committee had the power to act for the association?

Dr. Donnally: Yes, and agree upon terms; come back and report, and then, as a matter of course, if the association did not adopt the recommendation of the committee and the agreements made with the other committee, it simply leaves the body without any move on the subject.

Dr. Brown: They are simply to confer with them and report to us.

Dr. Donnally: That was not the motion at the time it was made, but it was with power. It is understood that the committee will come back and report anyway.

Dr. Faught: The next rule is that we recommend the adoption of rule 3 exactly as it stands.

It was moved, seconded and carried that the recommendation of the committee on colleges as to rule 3 be adopted.

Dr. Faught: Rule 4 becomes modified by striking out the last clause, beginning with "and any college which hinders or obstructs a proper investigation" and so on. As the reason for that we say "as we find no occasion for the last clause in rule 4, and as we believe the National Association of Dental Examiners to be capable of dealing with the contingency therein provided for, without stating specifically our action in advance, we recommend that rule 4 be amended so as to read as follows: 'The state boards in connection with this association are hereby required to become informed of the character of the dental colleges located in their respective states, as to their equipment, facilities and methods of teaching, and shall report annually to this association wherein they fail to comply with these requirements.'"

On motion the recommendation of the committee on colleges as regards rule 4 was adopted.

Dr. Faught: Regarding rule 5 we say, "As no reason exists to necessitate our association going back of the requirements of the laws of the different states, they being specific as to age requirement, we therefore recommend that rule 5 be amended by striking out the last clause, so that it shall read as follows: '5. Attendance of students upon three full courses of not less than six months duration each, in separate years, with three months practical instruction intervening between the courses, shall be required before final examination for graduation.'" Practically the requirements of the Faculties' Association, every word.

On motion the recommendation of the committee on colleges as to rule 5 was adopted.

Dr. Faught: Now we come to another very important rule, and that is 6. In our report we say, "We also found it necessary early to suspend rule 6, for the reason that the committee on colleges believes that recognition should not be based upon the number of professors composing a faculty, but upon the efficiency of the methods of instruction, maintaining, however, that there is a minimum number of professors below which efficiency must necessarily fail, and suggests that number to be six. Your committee also interpreted that it is arbitrary to insist upon a division into four dental and six medical subjects, to be covered arbitrarily by three dental and five medical professors, believing the subjects as a rule may be covered either by medical or dental professors, as may make more convenient combinations to any college in question. We interpreted, however, that the ten subjects as specified should be covered. We therefore recommend that rule 6 be amended so as to read: '6. Each dental college to be on the list of recognized colleges should have a teaching faculty composed of at least six individuals, and teach the following branches: Operative Dentistry, Dental Prosthetics, Dental Pathology, and Oral Surgery. Also the six branches of Anatomy, Physiology, Chemistry, General Pathology (fundamentals), Materia Medica and Therapeutics, and General Surgery. Their students must also be taught the subjects of Chemistry and Bacteriology in laboratories adapted to the purpose and under suitable instructors. That such special college must possess, in addition to suitable lecture rooms, a well-appointed dental infirmary and a general prosthetic laboratory, also each college must be provided with facilities suitable for manual training in operative dentistry, and must furnish in this way systematic instruction to its students.'" Now I may say that all that latter portion regarding bacteriology in laboratories, etc., we have no trouble about. They do it and make great efforts to do it; the Faculties' Association require them to do it, and it is done. Relative to the question of the number of the faculty we say "at least" six, and we suggest that number in the faculty; but I want to say to you that there are faculties where there are only five, and very important faculties, too.

On motion rule 6 as recommended by the committee on colleges was adopted.

Dr. Faught: Then we go on to say, "Your committee would recommend the striking out in toto of the rules numbered 7, 8 and 9, and would further suggest that rule 10 be made rule 7." We do that because we don't believe we have any authority in the premises We say in rule 7, "Final action shall not be taken on the application of any college until such college has been admitted to membership in the National Association of Dental Faculties." We do not care whether they have been admitted in the Association of Faculties or not. There are a great many institutions that have been admitted in the Association of Faculties that we have not admitted into ours until three or four years afterwards, so that does not carry any guarantee to us. We investigate on our own lines, and if we are satisfied with them there is no reason why we should wait for the Faculties' Association to admit them. They have institutions on their list to-day that we have not recognized; so there is no reason for our hanging fire on the action of the faculties. There are others they do not recognize which we consider very good institutions and we may recognize them, and we simply cut away from the Faculties' Association by cutting out that rule. So far as 8 is concerned, that applies to the colleges. It says: "No college shall be placed or continued on the list of recognized colleges which has connected with it in any capacity whatever a member of a state board of dental examiners." I would like Dr. Brown to give the reasons for our recommendation concerning that rule, as he can do it better than I can.

Dr. Brown: This was a favorite rule of mine last year, and I thought it would be of great benefit to this association. The arguments made at that time were all good, and they are just as good to-day as they were then; but there are other arguments which I think will counterbalance them. If that rule is retained we will lose from this association a great many valuable men. One I have particularly in mind is Dr. Brackett, of Rhode Island. At the time I favored that rule I did not even know that he was a professor in a college. There are a number of others who are connected with colleges only by reason of the fact that they hold certificates of stock of the college, and under this rule they would be forced out of the association, and it seems to me a hardship that we should force men out who have been working and doing good work for us for years. I therefore suggested to the rest of the committee on colleges that we cut out that rule entirely. Let the states take care of that matter for themselves, and if they do not want representatives of their colleges on their boards, let them see that they are not appointed.

Dr. Faught: Then regarding rule 9, the very thing comes in that we have touched on in other rules, which is that we must make the college publish in its announcement its requirements, for we have not the authority and they will publish what they please. We adopted this rule last year, and the colleges that have complied with it are those that are seeking membership. It is the new men who have been willing to put in their requirements and comply with the rule, but few of the old ones do so at all. We have no way of enforcing it, and what is the use of maintaining a statute with no power to carry it out. We concluded that the best thing that we could do was to step down as to making them do it; perhaps out of courtesy they will do it, but we cannot make them.

The president then called for a vote as to the adoption of the report concerning rules 7, 8, 9 and 10, and it was suggested that they be taken up separately.

Dr. Moore: I do not propose to say anything as to rules 8, 9 and 10, but want to speak as to rule 7. I think we had better let the Faculties' Association examine into the colleges and admit them before we do so. They are interested to keep out mushrooms and are going to see that they keep up the standard, and we ought to keep them out when they do so. They will be more careful if they think that course will be taken, but if they can get recognition from this association when they cannot from the Faculties' Association then they will be careless. They will advertise that they are recognized by the National Association of Dental Examiners and they will not care anything at all about the faculties. If they get recognition from this association they can use it as an advertisement and care nothing about the Faculties' Association. The men of the Faculties' Association have a much better opportunity to investigate them and know what they are than we have. We may perhaps have one man in the state living somewhere near the college who will look into it, but they are going to look into them all the way through, and see that they do not throw dust into their eyes or lower the standard and the fees, and get in by saying "We have been recognized by the National Association of Dental Examiners, and we are all right."

Dr. Faught: I think Dr. Moore is quite right and there is a certain amount of moral force in upholding the hands of the Association of Faculties There is no doubt that if we admit them independently we do in a measure make the colleges a little bit independent, still I do not think it will prevent them from becoming members of the National Association of Faculties. Still there is the other side of the question, the Faculties' Association have better facilities and every opportunity of knowing the institutions they place on their list, yet they have institutions to-day that ought not to be there. They are admitting colleges all the time before we are by any means ready to do so ourselves, and we do not have the facilities for finding out, that they do. Dr. Brown had a conversation with a prominent dean at Atlantic City two weeks ago, in my hearing, in which he made that very suggestion to the dean. He said, "Would twelve gold fillings in three years' time entitle a college man to graduate from your college?" and the dean said "No, no." Dr. Brown said, "There is a college which does that and that college is a member of your National Association of Faculties." "You don't say so," replied the dean. "Certainly," Dr. Brown answered. You see he did not know it. We want a higher standard than that.

Dr. Chappell: In section 2 we have the connecting link, provided the standard adopted in 1896 is not lowered. Then comes in the question, are we to have any connection whatever with the National Association of Faculties? I myself am in favor of retaining rule 7 as it is, for the simple reason that I want to hold the Association of Faculties responsible.

Dr. Finley: I would like to second the ideas of Dr. Chappell in regard to rule 7, and I think I can state an instance in point, regarding a college that will probably come up here for admission; it is coming up before the Faculties, and in which the local board at Washington has some interest. It is called the Tacoma College of Washington State. The Faculties sent a committee of three to investigate that institution and they have been there on the ground and have investigated the individuals on the faculty, the men who are trustees of the institution, and have seen the receipts for the purchases of equipment, etc. Our association has no such powers of investigation; we can get reports from individuals, but we do not know who the individuals are even by hearsay. These men go right on the ground. Now that rule does not say that because they have been admitted to the Faculties' Association we must admit them, but we do not have to admit them until after they have been admitted there, and we can refuse them after they have gone in there.

Dr. Moore: I do not wish to antagonize the Faculties' Association in any way. I desire to work with them.

Dr. Faught: Certainly.

Dr. Moore: I wish to see the Faculties' Association and this board working together. I want to see the board of dental examiners and the colleges in my state working together, and the same everywhere. Eighteen years ago three men in Virginia started out to elevate the standard of dentistry in that state, and that has been the sole object of the men who worked, in the first place to get a law, in the second place to get a standard, and in the third place to see that the board of dental examiners kept up a good standard, and the only object of those men, and those who had been with them from time to time, has been to keep up the standard of dentistry in our state and with it our sister states. We were tired and we are tired now of being classed with men who are not fit to be called dentists, nor to practice dentistry, nor to be associated with it, and we wanted to elevate the standard and see that hereafter no men came in who were incompetent. We worked on that line for eight years before we got a dental law. We had to work in the profession and then in the legislature, and we worked in the legislature for eight years, before we got a law of any sort, and when we got it it was not of any account, and we have had it amended from time to time until we have got it what it is, but it is not perfect yet. I say we must work with the Faculties' Association. Don't let them feel that we are antagonizing or opposing them in any way, but let us work with them to get a high standard and maintain it.

Dr. Keefe: I move the retention of rule 7 as it now reads.

The motion of Dr. Keefe was seconded and carried. It was moved that rule 8 be stricken out.

Dr. Chappell: There has never been a time during all the time that I have been on the board but what some of us have been a member of the faculty. At present the president of the Indiana board is a member of the faculty, so I am in favor of striking them out.

Dr. King: In Maryland we had quite a time having inserted in our dental law a provision that the board shall be an independent body and not connected with any of the colleges, but we succeeded in enacting the law. I think these boards should be kept independent. If the members of the faculties of the different colleges throughout the country are allowed to be members of the state boards and of this board, it is only a question of time when they will control the board, and instead of this being an independent body, acting in conjunction with them, it will simply represent their own rulings in the Association of Faculties referred right to this body and adopted.

Dr. Brown: The idea is all right, but it seems to me the remedy lies with the state boards and not with this association. It is one of those things we should not try to enforce very strenuously, for it will make trouble.

Dr. Edwards: I have been on our state board since the first enactment of the law in 1878, with the exception of four years, and I was engaged in college work. I then felt the propriety of retiring from the state board. My own sense of propriety dictated to me that such was the proper course. There were two of us in a similar position. I talked with the other about it and we both resigned from the state board. I saw reasons then which I will not relate here, but our own undergraduates came before us and we were subject to a double fire. Those who were not successful might suggest that we rejected them because they were students of the Ohio college and say we rejected them because we were afraid that if we granted them certificates they would not come back to the college and graduate. That is one objection. Another is, if you leave it to the state board to regulate these things, in a state where there are several colleges they can, by a little political intrigue, put in college men—I mean professional intrigue. The charge has been directly made in our state, and our secretary came very near getting chastised by a man who met him in a drug store and charged the board with being interested in a college, simply because a year or two before they had had some of the board down as clinical instructors, and we had the names taken off. But he had seen that and charged the board directly with having an interest in the college and forcing men to graduate from the college. There are a great many other reasons which might be named but those alone are sufficient to cause me to vote against having a college man on the board. In states like Illinois, where there are a great many colleges, they can easily control the board if they have a little influence.

Dr. Curdy: We have had a great deal of trouble in reference to this very matter, as my brother has stated, with the colleges in Baltimore. Some of you will remember the president of this association was connected with the Baltimore College of Dental Surgeons. We had quite a contention then and ever since that time we have had more or less trouble with this very section, and we incorporated it in our law for the purpose of preventing any more trouble occurring in that line. As my brother has said, if the members of the board belonging to the different colleges should get in control it would be a very bad feature and, as you know, the association recommends so many men to the governor who appoints from that number, and if this clause were stricken out and was not in our law they could control the board, and they would be examining their own students, and the colleges of our state would control the board of examiners, whereas since we had that clause incorporated in the law we have not had that trouble, and I think it would be unwise to strike out this rule.

Dr. Chappell: When this rule was adopted I called the attention of the board to the fact, and I severed my connection with the college. I have also sold out all my stock in the college, and on the strength of that rule I determined to retire from the board. The governor appointed the president of our college a member of the board for the coming year. If we retain this rule it will simply drive the Indiana board out of this association, and I guarantee that if you enforce your mandate you will find that half the membership of this board will be out before the end of the year.

Dr. Faught: Just a word in explanation. As the committee on colleges, we are delighted to find the association strengthening where we are willing to give way, yet I want to say to you that our experience tells us that if we have had more or less trouble with this rule before, we are going to have more trouble than less, if the rule stands, in the immediate future. We are going to lose, just as Dr. Chappell says, one board after another. Now it is wiser for us not to give up the idea contained in this rule; it would be much better for us to adopt a little more conservative spirit here and wait a year or two. Already some of the states have made it impossible for a teacher to be a member of the board, and I believe that will go on in the different states and we will find ourselves in a position where we can incorporate this rule. It is better to be a little conservative and wait while the various states are making this thing possible than it is to stand where we are and lose good men.

Dr. Hatfield: We have it in our state law, as nearly all have. We have it because the national board has it. Some of our men have gone out, they have chosen between the two and would rather stay with the college than be on the board. It does not seem to me at all impossible for any state to find enough good men to place on its board who are not members of a faculty. Let the men choose between the two. It was charged against one of our members, who was a member of the board, that students would go to the college with which he was connected because of his membership in the board. There is not a state in the country but what has enough good men, having no connection at all with the schools, to act upon the board. Therefore I think it would be disastrous to strike out that clause, because the minute you strike it out of the rules of the national board one state after another will strike it out, and very soon we will find that we have men connected with the schools governing and controlling the National Association of Dental Examiners.

Dr. Finley: I would like to say for the District of Columbia that we have just recently gotten rid of our last faculty man in the board of examiners, and I should hate to see the rule rescinded. We have been helped very much by it. We found there was weakness in the examinations because of having faculty men on the board. There was one man who was rejected by the entire board when a college man who was examining that student, who was from his own institution, gave him a percentage of 98, while the entire board, with that exception, gave him below 50. I understand that he was in the freshman class and had not passed for his junior, yet there was his professor passing him at 98 per cent.

Dr. Brown: The rule now reads like this: "No college shall be placed or continued on the list of recognized colleges which has connected with it, in any capacity whatever, a member of a state board of dental examiners." Take the state of New York. They are violating that rule, for they have members upon their boards who are members of a faculty. If that rule is allowed to remain, and we live up to it, we cannot, one of us, examine a man from New York. Three colleges in New York would be barred out.

Dr. Chappell: You would have to bar out Indiana.

Dr. Brown: It is a very serious subject. Talk about working with the Faculties' Association. Are we in a position to put in a radical rule like this, which, if we enforce, will make a great deal of trouble? If so, all right; if not, we had better leave it out. Perhaps we might add after the words "connected with it" the words "in the teaching faculty"; we might compromise on that, but I still think we are hardly in a position to retain this rule.

Dr. Thompson: According to the law passed in the last legislature of Pennsylvania the state board could not affiliate with this board if this rule was continued, or else, the colleges probably could not be placed on the recognized list. I was a clinical instructor in one of the institutions; but there does not seem to me to be any reason why a man who gives a clinic occasionally before a society or college should be debarred from being a member of an examining board. If this rule is retained at all it ought to be very much modified. I think, as it is, it does a great deal more harm than good.

Dr. Barrett: I think it is all very well to be conservative, but there is a very serious principle involved here. I do not think a man can very well serve two masters, and I do not think a man who occupies a position on the board should be connected with a college. He should identify himself with one or the other. If he feels that he should remain with the college, he certainly cannot feel that he should teach a man and examine him too. The case cited, where a member of the board marks the student 98, and the rest below 50, is only one. It is all very well to talk about the future of this national association, and that this will be its death blow. I do not believe it for a moment. I hold in my hand the report of last year's meeting, and I find that there are many men who occupied positions on faculties and after this rule was adopted saw the impropriety of holding the double position. Our worthy secretary sent in his resignation as clinical instructor of Baltimore college. I am heartily in favor of retaining this rule as it is.

Dr. Meeker: When this rule was broached last year I was heartily in favor of it, and immediately upon its adoption three of the New Jersey members sent their resignations to the dean of the college in which they were clinical instructors.

Dr. Moore: There were more than that, were there not?

Dr. Meeker: There were three from New Jersey and yourself from Virginia. I saw my name was continued during the year in their publication and I wrote to the dean and he told me it was through an inadvertence. But I chose between the two. I believe the suggestion, that this rule could be modified so that no teacher in a faculty should be a member, is a good one. It does not seem to me that a clinical teacher should be barred out.

Dr. Edwards spoke of the members of the board favoring students from their own colleges. If the New Jersey rule were adopted that would all be done away with. Our examiners know no man's name. They know him only by a number. We do not know who we are voting upon, or if a man has passed or not, until the secretary announces the vote. Therefore we cannot be charged with any favoritism towards any college whatever. I think if the idea that I have just referred to were brought forward in a resolution, we might vote upon it and settle it.

Dr. Lowry: There is no question but what there is a very strong local feeling against the placing of members of college faculties upon the examining board. There is a sentiment against it all over the country, which is stronger now than it formerly was. I do not believe that a man can efficiently work in both capacities, as a member of a college and a member of the state dental examining board. If the Faculties' Association get control of the Association of Dental Examiners it will become wholly inoperative—ineffective; it will lose all it has worked for. I have been connected with two colleges myself in the past, with one as a demonstrator, and with another as professor, and I know the feeling of the colleges on this question. If they can get control of this board or of this association you may rest assured that they will do it. They are harder workers than we are, because they have more of an object in view than we have as individuals. We have the pride of the profession in view. They have both that and the money that is in it in view. They will work more incessantly for that reason. In view of those things I would move that this 8th rule be amended so as to read: "No college shall be placed or continued on the list of recognized colleges which has connected with it, in the capacity of professor or stockholder, a member of a state board of dental examiners" That will allow any man who is in sympathy with a college to help it, but not as a professor or stockholder, for then he is personally interested in the college and in its profits and should be debarred on that score. If I can get a second to that motion—

Dr. Gilpin: Is not a clinical instructor also interested?

Dr. Lowry: Not in that way.

Dr. Gilpin: Unless you retain that section you run the risk of these two bodies being controlled by the same men. I shall vote for retaining the section as it is.

Cries of question, question.

Dr. Brown: I have a proposed substitute here, and in offering this I hope the gentlemen will grasp the full import of the article. It is not membership in this board or cutting out membership in this board which is affected, but it is the recognition of the colleges. Now, gentlemen, if that section remains in force you have got to revise this list of colleges; you have got to cut off probably five or six of the most important colleges in the United States—colleges that are doing the best work or as good work as any. Are we in a position to do that? Can we cut off the New York College of Dentistry, the University of Buffalo, the New York Dental School, and probably two or three of the most prominent colleges in Philadelphia? I offer this as a substitute for the other motion: "We consider it inadvisable for a member of the examining board to be connected with a dental college in any capacity whatever." There is no use adopting rules that we cannot enforce. It only weakens; so I offer this substitute.

Dr. Chappell: I am connected with the Indiana Dental College, and if this rule is left as it is the result will be that the Indiana Dental College will have to be taken off the list. As to what Dr. Brown has submitted, it seems to me that we might as well leave a blank there and take the rule out entirely. If we cannot make a rule which we can enforce with a mandate we might as well leave it out.

Dr. Dowseley: I would like to ask if Harvard Dental College ever made an application to be a recognized college.

Dr. Faught: Probably so.

Dr. Dowseley: In conversation with one of the instructors there I was told no.

Dr. Faught: They were admitted many years before the present gentlemen were in office here. They have always been on the list.

Dr. Dowseley: I am sorry that this rule was adopted last year, because it had the effect in New England of sending a very good man off our dental board and I fear that if it continues in force it may have the effect of sending away another, whose services I think are very valuable. While I regret much the loss of Dr. Brackett and shall also regret the loss of another doctor, who is now in the New England Board, as a member of the Massachusetts Board, my opinion is that it should stand, and that the examiner on any board should not be connected in any way with the colleges, and that the instructor of a college should in no way have a vote to say whether graduates should pass or not. I do not know whether we may go as far as to prohibit his being connected with the school in any way; but as an instructor whose marks shall count in the graduation, and then after graduation—or before if you please—he can examine him as a state board examiner, does not seem to me quite the right thing. We have in Massachusetts two colleges, and we have on our Massachusetts Board one gentleman who is a member also of one of our colleges. Supposing next year there is a vacancy, or perhaps two, and that the other college is represented on the state board by two members of the faculty, which is not at all unlikely, and the following year another member of this other college comes on the board. Who controls the board? Therefore I think it is best to keep that rule in force.

Dr. Lowry: My resolution, I believe, was seconded by my friend on the left, and it is in order to discuss the amendment, as I understand it, that no professor or stockholder in any college shall be a member of this association. State boards electing members of dental colleges in that capacity shall not be members of this association. I took that position just on account of what the gentleman has said just now, that no man whose vote in graduation counts for anything should be on the board, nor any stockholder. One has pride, and the other money in it, and it seems to me that covers the ground; and, inasmuch as the amendment has been seconded, I believe it is in order.

The President: You state it again.

Dr. Lowry: "That no college shall be placed or continued on the recognized list which has in it, in the capacity of professor or stockholder, a member of the state board of dental examiners." I will write that out if you will give me a moment's time, and get it into grammatical shape. It does not sound just right to me.

Dr. Keefe: I hope that we shall be a little conservative in this matter, for I certainly feel that, if we should strike out this rule, in a few years' time it would be regulated in the states. I feel particularly sorry in losing Dr. Brackett, and we shall surely lose another if we do this.

Dr. Johnson: I have taken the time to go over the advertisements of the colleges and compare the faculties with the list of members of the different state boards, and I have the papers upstairs in my room. You would be surprised to see the number of members of state boards who are directly or indirectly connected with colleges. I have gone over it thoroughly and have a full list, and it is perfectly useless for us to pass any resolution or article that we cannot enforce. It would be a matter of impossibility at this time to enforce this rule. The best thing we can do is to vote down all amendments and vote down the article itself—strike it all out and let it go.

Dr. Green: I feel there is little can be added to what has been said this afternoon. All sides of the subject have been discussed. But it does seem to me that the various state boards should regulate much of this difficulty. The law that has just been passed in the State of Pennsylvania and signed by the governor contains this proviso—that no man, no individual, can become a member of the state board who is connected with any of the colleges. If the various state boards would have such a law enacted it seems to me it would settle the difficulty. Throughout all the years that I have been a member of the state board in Pennsylvania we have gone through the various changes that have been talked about here this afternoon. When the first board was elected, in 1876, there were three gentlemen who were professors of the College of Philadelphia placed upon the board, and we all thought that if anybody was competent to make an examination certainly professors were. We were a set of ignorant men—some of us—we thought; we were hardly fit for it; but we thought the professors were just the men In a few years' time some of the members began to feel that there might be a little danger in having professors upon the board, because when an applicant came before them not a graduate, there might be a whisper of "Would it not be well to come to our college next winter?" There was just a little feeling that there might be a possibility of that. I was connected with the college at that time as one of the examiners and at once sent in my resignation, feeling that I wanted to be entirely disconnected with the colleges. Then the position was taken that professors should not be on at all and we ran the gauntlet of that idea. Every member connected with a college sent in his resignation; but two years later the question came up again and we thought there should be college men in the board, and we found that men had been changing their ideas on both sides. Then this very question that we have been discussing this afternoon came up and our association concluded to adopt it all. We now find the very men who were in favor of it before now come here and ask us to change it. It does seem to me that it might be wise to make this simple change that has been suggested—that no professor of a college should be a member of the board.

Dr. Chappell: As I understand, the question is not one affecting the membership of this board, but it affects the colleges; we have to strike off the colleges, not the members of this board.

Dr. Moore: I did not want to have anything to say about this matter and I handed over to Dr. Brown the resolution which he offered and which it seemed to me might be a solution of the whole question and meet the views of all. The suggestion is that we deem it inadvisable, that is all. We do not say that we will not keep the colleges on our recognized list if they fail to do it. As I say, I did not want my name mentioned, so handed that over to the committee on colleges to have it engrafted in the article. I want to place these men on their honor. Long before I was on the State Board of Virginia, and since, young men have often written me, asking me to advise them what college to attend; and since I have been on the board I have always told them my position was such that I could not give them any advice as I was a member of the State Board of Virginia.

Dr. Noble: I do not think that most of those here understand that if we retain that rule it will necessitate dropping a large number of good colleges.

Dr. Klump: Why were not the colleges dropped last year, when this rule was made by the association, and why would a modification of that rule tend towards dropping colleges now?

Dr. Faught: I can answer that question by saying that the committee on colleges have not acted. You have had no report on colleges, as we are unable to report yet on that subject. If you adopt this rule you will get a report that will startle you.

Dr. Moore: I am in favor of the idea that no member of the Board of Faculties should be on the examining board, but I can see the difficulty. We have regulated it as far as our state board is concerned and it will probably take care of itself in the various states.

The President: Is the motion of Dr. Brown offered as a substitute, or as an amendment to the amendment?

Dr. Brown: It was put in as a substitute.

A vote was then taken upon the substitute of Dr. Brown, and the same was adopted by a vote of 13 to 9.

Dr. Keefe: Do not we vote by states, and is not a state allowed 10 votes?

The President: Not in this matter; that is only in elections.

Dr. Faught: Now we come to rule 9 which will become rule 8. As it now stands it is utterly impossible to enforce it, as I stated to you before; and it is only a matter of courtesy if they grant it. The new colleges which are not on our recognized list have almost universally granted it, but not over a half dozen of the older colleges have paid any attention to it. If it stands you create a predicament which is somewhat ludicrous, inasmuch as we have no power to enforce it. I think it would be advisable to drop it and say no more about it. We have used only moral force in that direction, and that will do a great deal of good in the future.

Dr. Klump: I offer the following amendment: "That we recommend that every college on the recognized list be requested to state in its annual announcement that it complies with the rules and conditions of the National Association of Dental Examiners."

The above motion was seconded and carried.

Dr. Faught: The last and final recommendation we make is that rule 10, as it at present stands, become rule 8, and that these others become footnotes to the rules.

On motion the above recommendation was adopted.

Dr. McCurdy: Does a two thirds vote make a ruling, or a majority vote?

The President: Only a majority vote.

On motion adjourned until Saturday, July 31, at 10 a. m.

(*To be continued.*)

MINNESOTA STATE DENTAL ASSOCIATION.

The 14th annual meeting of the Minnesota State Dental Association was held in the Medical Building of the State University, Minneapolis, September 7, 8 and 9. The following officers were elected for the coming year: President, C. A. Van Duzee, St. Paul; Vice-President, L. P. Leonard, Wa-

seca; Secretary, H. L. Cruttenden, Northfield; Treasurer, H. M. Reid, Minneapolis; Executive Committee, T. B. Hartzell, Chairman, Minneapolis; Master of Clinics, C. H. Goodrich, St. Paul; H. A. Knight, Minneapolis; W. H. Murray, Minneapolis; M. B. Wood, Mankato; Membership Committee, I. C. St. John, Chairman, Minneapolis; T. B. Mercer, Minneapolis; J. B. Little, St. Paul; C. W. Nutting, Spring Valley; G. R. Day, Farmington. The next annual meeting will be held in St. Paul.

H. L. Cruttenden, Secretary.

LATEST DENTAL PATENTS.

588,444. Dental engine attachment. Frank W. Ketner, Hudson, N. Y.
588,796. Clinical thermometer, James J. Hicks, London, England.
589,332. Artificial teeth, Samuel S. Bloom, York, Pa.
589.383. Artificial tooth and making same, Herbert E. Dennett.
589,209. Tooth cleaner, Frank D. Gould, Port Richmond, N. Y.
589,048. Electric dental furnace, Charles A. Timme, New York, N. Y.
589,054. Disinfecting apparatus, Robert Westphal, South Bend, Ind.
589,499. Dental and surgical chair, Henry H. Elbreg, Indianapolis, Ind.
589,772. Air purifying apparatus, Charles J. H. Woodbury, Lynn, Mass.
27,637. Design, dentist's pliers, Henry Weston, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa.

(List furnished by John A. Saul, Patent Attorney, Washington, D. C.)

NORTHERN ILLINOIS DENTAL SOCIETY.

The tenth annual meeting of the Northern Illinois Dental Society will be held at Rockford October 20 and 21, 1897. A good program is in course of preparation, and members of the profession are invited to attend.

Partial program.—1. President's annual address, by Dr. E. H. Allen, Freeport. 2. Possibilities of Prosthetic Dentistry, by Dr. E. J. Perry, Chicago. 3. Correct Positions at the Dental Chair, by Dr. C. W. Cox, Batavia. 4. Preparation of Cavities, by Dr. M. L. Hanaford, Rockford. 5. Shaping and Improving the Appearance of Natural Teeth by the Wheel, by Dr. M. A. Webb, Chicago. Clinics.—1. Surgical Case and Treatment of Pyorrhea Alveolaris, by Dr. C. P. Pruyn, Chicago. 2. Tin and Gold Cylinder Filling, by Dr. T. W. Beckwith, Sterling. 3. Surgical Clinic, by Dr. T. W. Brophy, Chicago.

Louis Ottofy, Chairman Ex. Com.
J. W. Cormany, Secretary.

News Summary.

To Remove Bloodstains.—Soak in a 25-per-cent solution of potassium iodid.

National Association of Dental Examiners.—Editor Dental Digest, Please make the following correction: Instead of H. H. Johnson, Macon Ga., as one of the members of the committee on colleges of this association, J. A. Hall, Collinsville, Ala., was appointed by the president.

Chas. A. Meeker, L. Ashley Faught.

CORRECTIONS IN DR. PRICE'S ARTICLE.—Page 466, 21 lines from top, should read *milliamperes* instead of *million amperes*. Page 472, 3d line from bottom, should read "*effect of current*" instead of "*cocain*." Page 473, 8th line from top, should read "*There are no constant symptoms*," instead of "*There are constant symptoms*."

DENTIST ATWOOD IS SUED.—Refused to Examine Woman's Teeth Because She Wore Bloomers.—San Francisco, Cal., Aug. 31.—Mrs. Annie Kirk and her husband, W. S. Kirk, have sued W. A. Atwood, a dentist, for $250 damages alleged to have been sustained because he positively refused to examine the woman's teeth after he had agreed to put them in good condition. The reason for his refusal was that she came to his office on her bicycle and wore bloomers. She complains that he drew the line at her attire and expressed himself too freely before other people in his reception-room.—*Chicago Tribune.*

GOLD FILLINGS AFFECTED BY COLD.—To show what dense ignorance exists among some people on the subject of dentistry, we give the following clipping from the *Chicago Record*, taken from the experience of some Klondike explorers:

"Gold in the teeth falls out in the arctic regions. I cannot explain how this happens, but every man in our party whose teeth were filled lost the fillings. Probably the extreme cold contracted the metal and loosened it at the retaining points. Contact with the frozen biscuits may have had something to do with it. Mr. Snell was advised to have the gold fillings in his teeth removed and replaced with amalgam. He followed the advice."

REPLACEMENT OF THE LOWER JAW AFTER RESECTION.—At the Surgical Congress at Berlin, Hr. Partsch, Breslau, spoke on this subject. In place of the substitutes provided by the dentist, hitherto made use of and prepared before the operation, the speaker had had a simple one constructed that served the purpose very well. Immediately before the resection he bored two holes in the sound part of the lower jaw; immediately after removal of the diseased portion he placed an aluminum bronze arrangement, also provided with corresponding holes, in position. It was then firmly fixed by silver wire passing through both sets of holes. At first he sutured the mucous membrane of the mouth over the substitute, but had ceased to do so. Healing was not interfered with by the plate over the splint. The definitive substitute was later placed in by the dentist.—*The Medical Press*.

SULFUR FOR MOUNTING CARBORUNDUM WHEELS.—Powdered sulfur, such as is generally used for fixing tube teeth in position, is superior to shellac for mounting carborundum wheels in lathe chucks. To mount a wheel, heat it and the chuck over a Bunsen flame; put sulfur in the hole of the wheel, fit the chuck on the lathe head, true the wheel while the chuck is warm, secure the wheel in position by tightening the nut against it, hasten the setting of the sulphur by pouring cold water over wheel and chuck, and the result will be perfect fixture of the wheel on the chuck.—*Ash's Circular.*

FOR SALE.—A Case Dentist's Instrument Cabinet, in excellent condition, height 5-7½, width 24 inches, depth 18 inches; quartered oak, bevel plate-glass door; price, $28. Can be seen in Dental Protective Supply Company's depot, 1101—126 State street, Chicago.

The Dental Digest.

Vol. III. CHICAGO, OCTOBER, 1897. No. 10.

Original Contributions.

THE PRACTICAL BRIDGE OF TO-DAY, AND THE NEXT STEP TO IMPROVE IT.

By F. F. Fletcher, D.D.S., St. Louis. Read before the Missouri State Dental Association, at Pertle Springs, July 6-9, 1897.

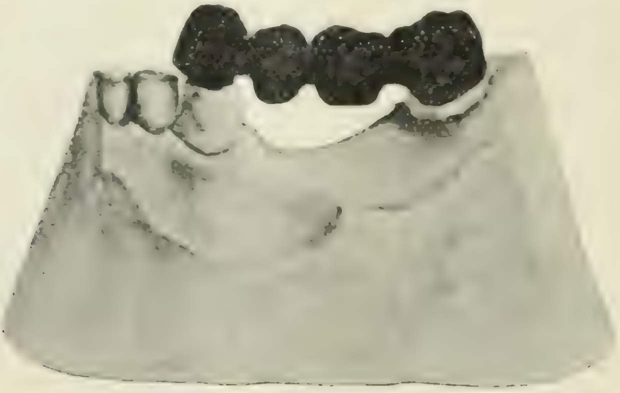
In the few remarks I am about to make on the broad subject of bridge-work, it is not my intention to give even a synopsis of the various kinds of bridges so well known to you all, but to confine myself to those replacing the posterior teeth exclusively, and to the inferior maxilla especially.

In replacing the anterior teeth we agree that in nearly all cases porcelain teeth are the only proper substitutes for the lost organs. By their use we can copy nature so closely that our work is not observed, except on close examination by critics. The beauty, contour and usefulness of the lost parts are restored so perfectly that our work passes unnoticed—one of the highest compliments that can be bestowed upon our labor. Our methods are so similar that this branch of the work may be safely laid aside at this time.

Passing to the posterior teeth, however, we are confronted with different problems. The teeth to be used as abutments are nearly always in an abnormal position, more especially the inferior molars. In place of our piers being parallel, they stand at different angles.

Bell-crowned teeth must be dressed down so as to have bands fit even approximately. V-shaped spaces are to be filled, angles and pockets for the lodgment of food are to be obliterated, etc. In fact, many conditions confront us that are absent in constructing an anterior bridge. We must have strength and cleanliness in both, but in restoring the posterior teeth utility and cleanliness must supplant beauty and art. Consequently we can use different materials.

Here might be termed a typical case for the so-called successful bridge of to-day, which I will describe. Teeth are left in this position, dressed down and crowns made for them, which we will assume fit perfectly when the bite is taken and before the several parts are united into a bridge; but when the attempt is made to place the finished case on the abutments prepared to receive it trouble begins. If the operator had not made it himself he would be ready to declare that the mechanical man had put in an extra tooth, but he knows everything has been done properly and it must fit, so, after he has ground corners, pushed, jammed, malleted, stretched the bands and perspired, he finally forces it into place. The case is next set in cement; the mutilated and stretched cervical edges of crowns are battered in against the tooth with foot-plugger and mallet; the case articulated and considered finished. The operator steps back and admires the result of his genius and mechanical ability. In a few days even the patient, if he recovers, declares the work to be so firm and useful that he is satisfied to have undergone the ordeal.

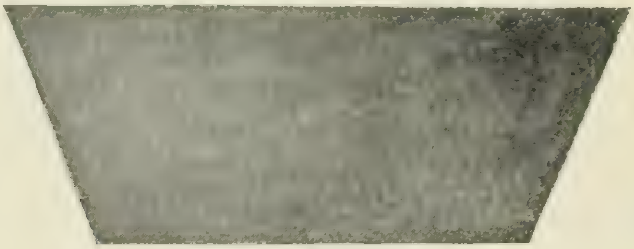


Now for the prognosis. By battering the cervical ends of crowns in against the abutments the instrument has indented, roughened and fluted the gold. The position precludes even the possibility of again restoring the contour and polishing. The crimped and uneven surface soon causes gingivitis. The malleting probably interfered with crystallization of cement, which soon begins to wash out, leaving pockets for the reception of particles of food, mucous and micro-organisms, thereby inviting pericementitis, caries, pyorrhea, alveolaris, pulpitis, and final destruction of entire case, from piers to superstructure.

I make but two criticisms on this class of work. First, the piers are not parallel, and *all bridges are ill-fitting in proportion as the piers diverge from the parallel;* second, *the dummies cover too much tissue*, in time causing irritation. These evils can and should be corrected.

In regard to the first, how shall we parallel the piers? There is probably not an operator present who would attempt to fill an approximal cavity without first securing space to properly restore the original contour. The same conditions exist here, only in a more exaggerated form, and the same principles should therefore apply. Call orthodontia to your aid, correct the position of these malposed teeth. Straighten them up until the piers are parallel, thus eliminating the V-shaped space, securing better occlusion, and placing the abutments in position to receive the finished bridge without injury either to teeth or bands. The bridge then fits as was intended. The piers being parallel, there is no excuse for a misfitting case. Furthermore, the bridge acts as a permanent retaining appliance, holding the former malposed teeth in their proper positions. Do not attempt to parallel the piers by grinding. It is a very deceptive practice, and in nearly all cases the band leaves the tooth on the mesio-proximal surface in proportion to the distance it is forced down. Regulate the teeth, and the construction of a neat-fitting bridge is made easy.

We will next take up the second criticism, that the dummies cover too much tissue and cause irritation. This defect is more easily overcome. The saddle should be made as narrow as possible. For, arguing from cause to effect, we find in this connection irritation and inflammation to be the result of uncleanliness caused by lodgment and decomposition of particles of food held against the tissues by the saddle. Therefore, as the most approved methods direct us to rest the saddle firmly on the ridge, we should so construct it as to cover the minimum amount of tissue. Make the case entirely of metal, making dummies with full-size grinding surface and the narrowest possible saddle, resting squarely on the top of ridge. The dummy slopes gracefully from the grinding surface to point of contact with ridge, but buccally and lingually; its construction is simple. With pin vise and wire secure shape and size of grinding-surface of tooth to be made from the model. With another pin vise and wire secure shape and size you wish to make the saddle. Cut and straighten wires and you have length of band at both grinding-surface and ridge. Cut band by the measurements and it presents this form. Solder band and flatten cervical end till shape of saddle is secured. File to fit ridge perfectly. Then burnish pure gold or platinum, thirty-two gauge, to ridge and solder to band. Construct cusps and secure articulation in the usual manner. Solder, and the dummy is complete. Carve model just enough to secure snug adaptation to ridge. Wax in place, invest and solder.



You have now constructed a bridge with parallel piers and a narrow saddle. This seems to be an ideal bridge, containing the combined good properties of strength, beauty, perfect occlusion, cleanliness, and it fits everywhere as was intended, eliminating the objectionable features of malposed teeth, V-shaped space, porcelain or combination of gold and porcelain, angles, pockets, wide saddle and ruined bands. This bridge will keep as clean as the adjoining natural teeth, which is the best you can do in any mouth, and will cause no irritation around piers, because they stand parallel, and there is no excuse for crowns not fitting. But little tissue is covered by the saddle, which is practically self-cleansing and causes no irritation.

Bridgework to-day is not an infant, but a sturdy youth, just passing through the awkward age, and he who in the future would lead him on to perfect manhood, must cast away the present fallacies of attempting to fit abutments standing at different angles, and constructing dummies on principles incompatible with the laws of hygiene. He must train his pupil on scientific lines, and when the finished scholar appears before us, in the shape of an ideal piece of bridgework, we will behold it divested of unclean saddle and diverging piers, designed on correct architectural lines, constructed on the principles of science and hygiene, and finished with all the beauty, art and symmetry that the then thoroughly educated dentist can call to his aid. In my opinion, the ideal product will contain a narrow saddle, which is hygienically correct, and parallel piers, as the only form permitting of perfect adaptation and occlusion.

PRESIDENT'S ADDRESS.

BY D. F. ORR, D.D.S., LIBERTY, MO. DELIVERED TO THE MISSOURI STATE DENTAL ASSOCIATION, AT PERTLE SPRINGS, JULY 6-9, 1897.

Members of the Missouri State Dental Association, Gentlemen: I most heartily congratulate all who are in attendance at this annual meeting. I do this not alone because of the pleasure created by fraternal union and the sympathy elicited by social contact, but for the further and higher reason, that the purpose of our association is the promotion of science, and by that the lessening of human suffering. Science is truly the handmaid of humanity and every step that she makes relieves an ache or removes a pain.

It can not be doubted that these meetings are of the highest value to our profession, inasmuch as they condense into the written and oral expression of a few hours the infinite experiences and matured reflections thereon of hundreds of men, who during the previous year have found truth along the pathway of pain and suffering.

I most heartily congratulate you on the passage by the general assembly of our state last winter of the act in relation to dentistry, in lieu of the meager provisions concerning it which were to be found in the Revised Statutes of Missouri for the year 1889. The new act is a great step in advance for our profession. This can be realized only by a minute comparison of the two acts. The new one justly places dentistry on the same plane with the highest scientific professions.

The profession of dentistry no longer consists of scattered individuals, unknown to the law as a distinct calling, of doubtful merit in the eyes of medical men of the world, not always discriminated by the masses of the people from the itinerant tooth-pullers, whose art began with the bullet-moulds and ended with the forceps, but of trained, educated, scientific men, men of large views, culture and experience, who are recognized by the state as constituting a profession of great beneficence, and who are entitled to the regard of the law-maker and the confidence and respect of the citizen.

The act unifies the members of our profession in the state, gives them an energetic organism, and places them in a position where they can not only purge dentistry of unworthy professors, but are able also to secure the honors and rewards of our calling due to men of merit and true scientific attainments.

It provides for a state board of dental examiners, with ample power to guard the avenues of admission in the interest of the people and the profession against those not sufficiently equipped with the necessary scientific learning for the proper and humane practice of our profession.

And, beyond all, it fixes a standard of morals and scientific attainment for those seeking admission to our profession, which will insure in our state a body of dental practitioners fully equal to the demands of the world now on all liberal and useful professions.

In fact, I do not see aught more that is needed in the law. It gives an opportunity for which we have waited for many years, and now, in the true spirit of progressive science, let us use it nobly.

The act provides for the appointment by the governor of five members of our profession, each of at least five years experience in dentistry, as a "State Board of Dental Examiners for the State of Missouri." Upon this board, through its by-laws and regulations, devolves the faithful execution of the provisions of the act. Its functions are delicate and weighty, but such as really should be courted by all those members of our honorable calling who look beyond mere self and are willing to give a part of their time and abilities for the good of all of our fellow-citizens.

In this address I have deemed it wiser to direct attention to the great act now on our statute books regulating the whole question of dentistry in our state, rather than to attempt any resume of the progress made during the past year. The act furnishes ample text for abundant discussion and eulogy. The enlarged intelligence and critical acumen of the essayists for this meeting, and of those who shall indulge in discussion, will make abundant amends for any omission on my part in the direction indicated. Moreover, a resume is almost always of necessity, for brevity's sake, a dry detail of facts, probably known to all intelligent dentists, and the facts thus stated are sure to be lacking in that expansion which gives clearness and that pungent criticism and epigrammatic expression which enliven style.

FUSIBLE ALLOYS.

By John G. Harper, D.D.S., St. Louis, Mo. Read before the Missouri State Dental Association, at Pertle Springs, July 6-9, 1897.

It will be observed that all the following alloys will melt in boiling water:

	Tin.	Lead.	Bismuth.	Cadmium.	C.	F.
Newton's	3	2	5	0	100°	212°
Rose's	3	8	8	0	95°	203°
Erman's	1	1	2	0	93°	199°
Wood's	2	4	7	1	70°	158°
Mellott's	5	3	8	0	93°	200°
Harper's	4	4	7	1	80°	180°

Erman's alloy can conveniently be made of equal parts of plumbers' half-and-half solder (as it is composed of equal parts of tin and lead) and bismuth.

Harper's alloy can be made of eight parts of half-and-half plumbers' solder, seven parts bismuth and one of cadmium, and can be poured into a modeling composition impression. This alloy is hard enough to withstand the hammering required and makes a smooth sharp die. Dentists who have no special system can get female dies by the following method: Take a plaster model of a suitable tooth, saw off the crown surface, dress the flat surface smooth on a coarse file, lay on a flat surface, place a rubber ring over the model to hold model in position and to keep it in place when metal is poured, place the point of an old excavator on model, soon as metal is poured remove the instrument; when the metal is cool turn the model downward and tap the metal until the model drops out, thus saving the model, as the first pour might not give a perfect cast. To make a cast from an artificial tooth, place softened modeling compound in a rubber ring and imbed the tooth, leaving required amount of articulating surface exposed, cool the compound, trim nicely and shave the compound far enough below the upper surface of ring to give space for the cast, or place another rubber ring on the one containing the compound; then the model is ready for the pour.

To use this metal for dies on which to swedge plates, it is necessary to use modeling compound as a counter-die. To make a modeling compound counter proceed as follows: Soften the compound and place in lower part of a vulcanite flask, lay rubber-dam over the compound and press the die into the compound; when cool remove the die and you have the counter. When swedging use the dam between the plate and counter. To drive plate into small depressions in die, between the teeth for instance, lay a bar of lead on the plate and drive to place with hammer. This metal will not make a sharp enough die for a plate when cast in a modeling compound, as the large amount of metal softens the impression, but for small dies it cools quickly and gives a sharp die, therefore cast in a plaster of paris impression. To obviate taking more than one impression of the mouth, use the die to make an impression in compound and in the impression pour the metal; this die will do for the first swedging and you can use the die made in the plaster impression for the final swedge.

DISCUSSION ON CATAPHORESIS.

At the Regular Meeting of Alumni Association of the New York College of Dentistry, May 8, 1897.

Dr. Swift: Some question has been raised as to whether Cataphoresis is the best term we can apply to the electrical diffusion of medicaments through the tissues. Looking at the practical side of the question I would speak first of the devices by which the current is controlled. Before going further, however, let me describe the construction of the device which I had built according to my own ideas: The cylinder is made of non-conducting fiber, ten inches long and two inches in diameter, wound with fine german-silver wire. The cylinder is revolved by means of fine gearing, either to the right or left, by the hand-wheel, and there is a sliding contact which works on a worm-thread so adjusted that the cylinder makes one revolution before the sliding contact moves to the next strand of wires. Revolving the hand-wheel once causes cylinder to revolve five times, and five complete revolutions of cylinder would deliver to the patient one-half volt, or by two turns of the hand-wheel, which would cause ten revolutions of the cylinder, one volt would be delivered.

When obtunding sensitive dentin in a case which is very sensitive to the current, I spend if necessary five minutes or more in delivering one volt, but the increase being constantly at the rate of at least 1-600 of a volt no pain is caused, and yet there has been an unbroken and continual increase of current, which I believe diffuses the medicament much more rapidly and less painfully than when the current is delivered in jumps of not less than ⅛ volt, and where the tooth is very sensitive being obliged to stop several seconds at times until the pain subsides.

In obtunding sensitive dentin I sometimes use a twenty per cent solution of cocain, and often simply moisten a small piece of cotton and pick up a few crystals with it—about a fifty per cent solution.

Cataphoresis is used very successfully in extirpating living pulps, and it can be accomplished without causing the slightest pain. Many who use cataphoresis, in writing or speaking on the subject seem to consider that obtunding sensitive dentin, extirpating live pulps, and bleaching teeth are the most important uses to which it can be successfully applied; and, it seems to me, lose sight of the many other important uses to which it should be adapted. Obtunding of sensitive dentin is by no means the most important use I make of cataphoresis. In bleaching teeth I cannot say I get any better results by using the twenty-five per cent solution of pyrozone cataphorically, than by the old method of using the same solution with hot air. I find it takes about the same amount of time and the final result is no better. I find the use of cataphoresis very successful in the treatment of chronic abscess. Often these cases of chronic abscess with fistulæ are due to a small portion of necrosed bone. In these cases I wrap a piece of cotton saturated with a twenty per cent solution of cocain upon a small platinum electrode, carry it down into the fistulæ, and spend about three minutes with a voltage averaging from fifteen to twenty, and completely obtund the surrounding part; then with a bur remove the necrosed bone and if necessary the apex of the root, and after thoroughly cleansing the part place a small wire-like piece of zinc in my positive electrode carrier, and passing it through the fistulæ deposit a nascent chlorid of zinc directly where desired, as suggested by Dr. Morton. Many such cases which have resisted other treatment have thus been successfully dealt with.

In allaying peridental inflammation or apical pericementitis I use a single cup electrode, filling it two-thirds full of cotton by winding it about the platinum in the bottom of the cup; then saturating this with a solution of Churchill's Saturate Tincture of Iodin, diluted one-half with equal quantities of alcohol and water, applied directly to the gum tissue at the point of inflammation, beginning generally with ten volts, increase rapidly, using from seventeen to twenty-one or two volts, according to the ohmic resistance of the patient, and maintaining the contact from five to eight minutes.

This line of treatment has been wonderfully successful, and to illustrate that it is applicable to many cases of inflammation before suppuration has occurred, let me cite one or two instances. One case, which came under my care about three years ago, was a first upper right molar with a blind abcess, face very much swollen and the eye almost closed. On opening into the tooth good drainage was obtained, and after subsequent treatment the roots were finally filled with fibers of cotton and oxychlorid of zinc and the crown with amalgam. It gave no trouble whatever until over two years had passed, when the patient returned to me with considerable swelling and inflammation in that same region, the tooth sore to articulation and to touch, not a severe pain but sufficient to make sleep impossible. Instead of opening into the root I simply made a cataphoric application of dilute tincture of iodin as before described, using according to my record of the case as a maximum twenty-two volts with a contact of eight minutes. The application was made on the day before last election day. Nothing more was heard from the case until some time later when the patient's husband informed me that the swelling had gone down the next day and there had been no further trouble. I have since seen the tooth and it is apparently in perfect condition.

During my absence last summer my assistant had under treatment a left superior second bicuspid with a blind abscess, which was quite troublesome even after continued treatment; whenever a tight dressing and stopping were inserted there was a disturbance. Eventually it quieted down, and the day before my return the roots were filled and a temporary filling placed in the crown cavity. The next day the patient returned to see me, complaining of pain. The tooth was somewhat elongated and very tender to pressure, the face being slightly swollen. Concluding that the trouble was due to apical pericementitis, I made an application of dilute tincture of iodin cataphorically, as before described. The inflammation entirely subsided, and when I saw this tooth not long ago it seemed to be perfectly normal.

Cataphoresis may be very successfully used in the treatment of facial neuralgia. Numbers of cases have come under my care where the family physician had failed to effect any lasting cure and as usual the dentist was called upon as a last resort.

When a careful examination of the teeth fails to disclose any solution as to the cause of the trouble, I have given relief by applying dilute tincture of aconite, using the single cup electrode, positive, and placing the negative pole sometimes on the chin at the mental foramen, or just below the medulla and elsewhere, tracing with the positive electrode any nerves which appeared tender to the pressure, whether in the mucous membrane or at the supraorbital or infraorbital region, the voltage used varying from six to twenty-two volts as the case might seem to require, and the application consuming some considerable time. I have also used dilute alcohol with the addition of menthol crystals, as well as other remedies.

I had one patient who had suffered with neuralgia for five or six years and who had been under constant treatment. One of these treatments described I found afforded relief for about one week, then the pain would return. I could give no reason from the condition of the teeth as to its cause, and decided that continued application might have some lasting effect. For some time I treated this case every day, then every other day, then twice a week, then once a week, and then with increasing intervals, until finally this case which had suffered for years with ever-recurring neuralgia has now been quiet for months.

In the treatment of pyorrhea alveolaris, where I am anxious to have my drugs penetrate deeply, I use a thin platinum wire electrode where the pockets are large, upon which I wind a small piece of cotton saturated with whatever drug I may wish to use, taking care not to come in contact with the roots of live teeth, as I use a comparatively high voltage in these cases. The results thus obtained in these particular cases have been much more satisfactory than any other method of treatment heretofore employed.

I use cataphoresis also in applying cocain when setting crowns and bridgework, using the double-cup electrode which is commonly used for extraction, applying both cups upon the gum tissue about the tooth to be crowned, and using a twenty per cent solution with a contact of from two to three minutes.

The advisability of using street current or batteries has been a mooted question. Many claim that the former is preferable; others would not use it, and give numerous reasons why, naming as one the likelihood of some serious accident to the patient, or at least the possibility of an unpleasant shock, owing to some sudden change in the voltage at the central station or the crossing of wires, and last of all the elements, such as a severe thunderstorm. While acknowledging the truth of these assertions, there is still another important reason which it is well to consider. If you go into one of the central stations in any large city, and if you happen to have "a friend at court," so that you may be shown around thoroughly, you will see a recording voltmeter, the office of which is to record the voltage on the lines as they pass out of the station. If the voltage remained constant, as it should, the pencil of this instrument would record a smooth line, instead of which it traces a wavy line, showing that the voltage is anything but constant, due of course to the varying demands upon the station. Some claim that these slight variations have no effect upon cataphoric medication, but I consider that they retard the direct passage of the drug from the electrode through the tubuli, causing frequent painful shocks to the patient.

There has been some question of late as to the death of pulps after using cataphoresis, and many have attributed this to the use of cocain. I can see no reason why the small amount of cocain used in obtunding sensitive dentin should cause death of the pulp, but firmly believe that sudden and severe shocks would occasion it. When the pulp sustains a shock, occasioned by sudden increase of voltage, and if there is a retraction of the pulp, the question arises, how many such shocks and retractions will the pulp stand without causing aftertrouble? Should there be retraction the pulp must be drawn further away from the tubuli, and thus at least retard the transmission of the medicament.

Dr. Frank Van Blarcom: I agree with Dr. Swift that the most satisfactory method is to start the current at an exceeding low voltage and gradually increase it to the desired point. I cannot use more than ten volts without severe pain to the patient.

Dr. Sailer: How much voltage is ordinarily used?

Dr. Swift: I cannot accurately answer that question, as the resistance of teeth varies so much. In some cases with seven volts I get as good results as with twenty-two in the same length of time.

Dr. Chitterling: In one case I anesthetized a cervical cavity, very sensitive, in four minutes, using as strong a solution of cocain and electrozone as I could make. I make my solution as follows: Put some cocain in a minim glass and drop electrozone on it to dissolve, and then saturate cotton with the solution. I watch cotton to see that it is moist, putting a drop on now and then to keep it so.

Dr. Sailer: Everything which tends to alleviate suffering should be thoroughly advocated, but I think cataphoresis has been pushed too far. If it has any action on the pulp it interferes with the nervous system of the tooth, and so it acts on the circulation; the circulation must necessarily, therefore, be choked and stagnated for a certain length of time. We know what causes congestion, and when the circulation starts up later, with the increased force that is necessarily behind it, there is a likelihood of congestion. If more blood gets into the pulp of the tooth than can possibly get out of the apex of the root, if the pulp once becomes congested, the blood will never get out of the apex again in its normal state.

Dr. Mitchell: Dr. Luckey once remarked, that where cataphoresis was used there is much danger of drilling too deep, and so inserting our fillings too close to pulp, which will bring on after trouble.

Dr. Swift: Many cases have come to my notice where the pulps were abnormally high or low and where any measurements would have been unreliable. It therefore behooves us to be very cautious where thorough anesthesia of the parts has been secured, or we may easily encroach upon the pulp. So far as I know I have never lost a pulp nor found any pulpitis after cataphoric applications, except inflammation in deep or in cervical margin cavities, where a metal filling in close proximity to the pulp acted as an excellent conductor of heat and cold.

Dr. Forsheim: I have found in some cases, where the tooth is very sensitive, that when I press inside and outside the gum above the root the patient feels no pain.

Dr. Gottschaldt: My conclusions in regard to cataphoresis and other so-called obtunders are that the influence is largely on the patient's mind. A literary man, one of the most nervous persons I ever met, came to me for service. I told him I would fill a tooth for him at once and would not hurt him. I applied the dam, put a drop of carbolic acid into the cavity, a very small and simple one, as I always select an easy cavity for a first operation on a nervous person, and after waiting a few moments I excavated with an inverted cone bur and prepared that cavity before the patient was aware of it. After filling twenty-three cavities for him, in about as many sittings, he still maintained that the medicine had prevented the pain. I could give many such instances, but this one will make my first statement clear. My method is: Use sharp, clean instruments, be kind and gentle, let there be no undue exhibition of paraphernalia, know what you are going to do and do it. If we consume the greater part of our time in obtaining effects, what will there be left for work?

Dr. Swift: If we were all so conservative as to discard cataphoresis simply because it occupies a little extra time, we should not always please our patients, who, if willing to pay for extra time in order to save pain, should have such treatment. I also firmly believe that positive results are constantly obtained where it would be unfair to say that the cause was purely mental.

CHILDREN'S TEETH.

BY O. S. KERR, D.D.S., INDEPENDENCE, MO. READ BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT PERTLE SPRINGS, JULY 6-9, 1897.

The intention of this paper is not to teach members of the dental profession things they do not know, but rather to call to their minds what they have already learned and to urge the practice of same.

The study of children's teeth is, in my opinion, a very important factor in dental practice and has so seemed to me since I was two and a half years old, for to the best of my knowledge I had toothache from that time until all of my deciduous teeth were removed, which was not until I was thirteen years old.

We as dentists should first inform ourselves what can best be done, and the next step, and a very important one, is to educate patient and parents as to what can be done and the necessity for such attention. We well know that in normal dentition the deciduous teeth will have erupted at the age of two and a half years, and some of them should remain in until the twelfth year; and yet some of the deciduous teeth often begin to decay before all have erupted. Caries in most cases is a token of the oncoming odontalgia, and I believe it to be the cause of many systemic disorders in children. Toothache alone is enough to give rise to family disturbances, especially if one of us dentists be the victim; and even if the caries should not give rise to toothache, but the teeth be prematurely lost, certainly their functions would be lost also. The first of these functions is mastication, next retention of the proper contour of the dental arch, and third beauty. I need not say anything about the importance of mastication, as you all know the old law: "Food well chewed is half digested, while food half chewed goes unmolested." Secondly, in retaining position, as it has to do with the alignment of permanent teeth, I think there is no truer type of selfishness than that illustrated by human teeth. They will attempt to take all the space given them from any cause, and if possible keep it. If deciduous teeth be prematurely lost, the first teeth that come in will have a tendency to lean in the direction of the least resistance, thus closing the space which should be occupied by the permanent teeth, and so the arch is contracted too small for the teeth and some of them must be pushed out of alignment, resulting in irregular and crowded dentition in many cases. As to the appearance of the deciduous teeth, it is quite necessary to retain them as long as possible, for if they are kept in place until the near approach of the teeth that shall take their places, the child does not have that toothless appearance which was once so readily associated with old age. If perchance a tooth should be left in too long and so crowd another out of alignment, the space is there, and by a simple operation, namely, extraction of a tooth, the permanent one will come in place. If it does not we have only one tooth to move in order to correct the deformity, while if the arch should have contracted from premature loss we should have to move several teeth to expand the arch, and then perhaps be compelled to use mechanical means to bring the permanent tooth into position.

An ideal filling material is one which has all good qualities and no bad ones. I have never been able to find such a one, but I think cement comes nearest meeting all requirements in deciduous teeth, though in some mouths it wastes away very readily. It is easy of adaptation and is used more generally than other material, owing to its color and its nonconductive properties. Amalgam is a good filling material for deciduous teeth, if used before the decay has gone too far. I prefer tin for the molars when the case will permit of its use; it is easy of adaptation and not so dense as amalgam or cement. In deciduous teeth it is quite necessary to have a filling material that is soft, as the teeth for a considerable time during absorption depend mostly on the gums for support. In filling a molar which has been treated and the canals filled, I make a floor of cement over the root-filling and allow it to set, then fill the cavity with tin-foil

We must know how to handle pulp exposures and pulpless teeth, as most patients will not seek a dentist until they have one of these troubles. The first and a very important thing is to stop the toothache, for the time being at least, and not hurt the child. If the case is simple exposure in an inflammatory condition, carefully remove what debris is necessary and dry cavity, apply carbolic acid and cocain on a pellet of cotton, and seal with temporary stopping, allowing this to remain about twenty-four hours. At next sitting remove stopping and apply a small pellet of devitalizing fiber moistened with carbolic acid and cocain. Allow this to remain twenty-four or forty-eight hours, then remove and apply tannic acid and glycerin on cotton and allow this to remain in five days or a week. At next sitting remove pulp, dry the canals and treat with oil of eucalyptus, leaving three days. At next sitting dry the canals and fill with Gilbert's temporary stopping dissolved in chloroform.

With putrescent pulps the first treatment will be entirely different from that in the first stage of inflammation. Relief may be given by opening into the pulp-chamber and allowing the gas to escape. I have had cases where the pain was so great that it was necessary to use cold applications to stop the pain, then I burred into the pulp-chamber during the relapse of pain. A very good remedy is to treat with tannic acid and glycerin after opening into the canal. Allow this to remain in two or three days, when the soreness will have subsided and the pulp contracted. At next sitting pulp may be be removed, and then continue treatment in the usual way.

In treating abscesses in deciduous teeth I employ the same remedies as in permanent teeth, except that I do not use so great a quantity of any medicine which has much power as an irritant. The first thing is to stop the toothache without hurting the patient, as it is very necessary to make a good impression at the first sitting. And above all in the management of a child do not allow the mother, father, nurse or anyone to stand by the chair and sympathize with patient or in any way offer assistance in controlling. I do not believe in bribing or coercing a patient and in as many cases as possible would have him come to my office alone. It not only makes sure of no sympathetic interruptions, but it teaches the child bravery. He will then depend upon the dentist for protection, and do not deceive by saying you will not hurt, and then break your promise. I never tell a patient, especially a child, that I will not hurt, unless I am absolutely sure, which is seldom. I often find it a splendid idea to explain the nature of the pain as nearly as possible. Be pleasant and sociable with the child, but be firm and decided as well. Lead him to believe there is but one way to do the operation and it must be thorough. Do not get angry with the child and let him know it; it doesn't matter so much if he gets angry with you occasionally.

To illustrate, let me relate a case of management which took place during my senior year at college. A little girl, about eight years old, was given me for examination. She was delicate and nervous, which I discovered in a moment at the chair. I allowed her mother, who accompanied her, to witness the examination. I decided to insert five tin fillings, and after giving the mother a seat behind the chair, proceeded to remove the debris from one of the cavities, being careful not to cause any pain. I partially prepared four of the cavities and filled with temporary stopping, then made an appointment with her for another sitting. She came on time, accompanied again by her mother. I put the dam on one of the molars and proceeded to finish the preparation of cavity, and was getting along nicely when the mother interrupted by saying: "Jennie, I am so sorry for you; can you stand that dam a little longer?" At that the tears streamed down the child's cheeks, although before she was as cheerful as anyone could be, even under more pleasant circumstances. I therefore asked her mother to have a seat at the rear of my chair, a considerable distance away. In five minutes I had the child's courage restored, and continued work until a tin filling was in place, then changed the dam to the other side of the mouth and put in one more filling. I then asked the child if she would come alone for the next sitting, explaining to the mother why I would have her absent herself. She had seen the result, and so agreed to let the child come alone. This was one way to educate the parent, not only what should be done, but how easily it was done, which was a surprise to her.

I have had some children, when beginning their work, so nervous that it seemed almost impossible to get them under control, and if you will inquire into the history of such patients, you will find in most cases that some dentist has deceived them by saying, "It will not hurt you a bit," and then plunged an excavator into a sensitive place or jerked a tooth out. A dentist who will thus take advantage of a child does not deserve any patients. I believe the meanest trick I ever saw played on a child was by a dentist and a student. Both the dentist and the mother had persuaded and threatened the child in vain. At last the dentist fixed a cork and showed the student how he wanted it placed in the mouth and held. The student stationed himself in a convenient place while the dentist asked the child to open her mouth that he might see the tooth, and the cork having been slipped into the mouth, the tooth was quickly extracted. It was gone, but so was her confidence in all dentists, and will be for years, though she be treated very tenderly.

OPIUM.—A contracted pupil is always a contraindication to the use of this drug.

TORTICOLLIS.—Dr. Gillette (*Pediatrics*) reports three cases of torticollis due to adenoid vegetations and chronic hypertrophy of the tonsils. One case was cured by the removal of the local trouble and the others were greatly benefited.

THE "JAG CURE."—A noted London chemist has analyzed Keeley's bichlorid cure with the following result: Water, 31.61 per cent; sugar, 6 per cent; a trace of mineral salts, principally lime, and 27.55 per cent of strong alcohol.—*Nature.*

TO REMOVE NITRATE OF SILVER STAINS FROM CLOTHING.—A solution of iodin in ammonia water, the so-called colorless tincture, will remove nitrate-of-silver stains from the hands, clothing, etc., but owing to the danger of the formation of nitrogen iodid, which is a powerful explosive, it is not recommended. A solution of iodid of potassium dissolved in water is nearly as quick and quite as effective. Dissolve fifteen parts of iodid of potassium in fifty parts of water, and to the solution add ten parts of iodid. When the latter is dissolved add sufficient water to make 500 parts. Keep in a well-stoppered bottle. Treat the spots with this, and after a few minutes with a 10-per-cent solution of caustic soda, which will remove the silver iodid formed by the first treatment.—*The National Druggist.*

Digests.

MEDICINAL PREVENTION OF DENTAL DECAY. By G. H. Winkler, M. D., D. D. S., New York. Dental decay is a subject which should be brought within the scope of the physician. The researches of Professor Miller, of Dr. J. Leon Williams and of Dr. G. V. Black have demonstrated beyond any question that bacteria are present in all decay of the teeth, and their conclusion that microorganisms are the cause of dental decay has been generally accepted. The slides exhibited recently in New York by Dr. Williams have exposed these germs in the very act of their destructive work. Bacteria, whenever they can gain a lodgment in defects of the enamel, or when in diseased conditions of the mouth can become felted or glued to the surfaces of the teeth, excrete lactic acid. This breaks down the calcium salts of the enamel and procures for the bacteria an opportunity to burrow into the enamel tissue or cement which binds the enamel rods together, and later on into the dentinal tubuli, excreting their acid as they burrow, thus producing decay. The conclusion has therefore been reached that these little organisms are the primary cause of dental caries. I do not accept this conclusion; on the contrary I am convinced that while bacteria are present in all dental cavities, and are the direct cause of decay in some cases, the primary cause of dental decay in a majority of instances lies in a morbid state of the system which gives into the mouth perverted secretions. Close study of the subject, careful observation of the conditions in the mouth, and above all, successful prevention of decay by medicinal treatment, compel me to dissent from the generally accepted theory and enable me to divide the causes of dental caries into three classes. Two of these are pure dyscrasiæ, amenable to medicinal treatment. The third is a local disturbance requiring operative interference. The first class, which is the most destructive when it exists, consists of a pathological condition of the mucous glands of the mouth, more especially those situated on the gingival borders or free margins of the gums, which results in the excretion of an acrid corrosive fluid which excoriates the epithelium and corrodes the teeth, usually forming cavities around their necks. The mucous glands in a state of health secrete a clear, colorless liquid, very slightly acid, which bathes the necks and crowns of the teeth, dissolving and washing away any particles of food that may lodge about them. In the pathological condition which we are now considering this normal condition yields to the one above described, and, apart from damage done to the gums and teeth, not infrequently produces serious disturbance of digestion.

The appearance of the disease exhibits usually a line of inflammation extending along the festoons of the gums and interdental spaces, more frequently conspicuous about the palatal and lingual aspects of the molars, while at times the entire gingival borders are involved. The discoloration in some cases is so slight as to require close scrutiny to detect it; at other times the diseased borders are turgid and purple in color; again, a crimson line marks the site of the affection, and in more advanced stages we have raw surfaces and phagedenic ulcerations.

The glandular excretion in some patients is clear, limpid, and sharply acid; the teeth appear clean, but present slight erosions at their necks, which are of the same color as the teeth, firm to the pressure of an instrument, but exquisitely sensitive; or the erosions may present the light-brown and sometimes the chalky-white appearance of rapid acid disintegration, soft in feeling, with pits here and there along the line of decalcification, and like the first extremely sensitive. In other cases the excretion is turbid, viscid, excoriating, corrosive and fetid, covering the teeth with a murky or yellowish slime which no amount of cleaning can keep off, imparting a disagreeable taste to the mouth, especially on waking in the morning, and an offensive odor to the breath. Beneath this tenacious exudate the teeth are covered with extensive decays, which present edges so friable as to be readily broken down by the pressure of the finger nail. So much for the first of my classes of the causes of dental caries; it is a simple dyscrasia and yields readily to medicinal treatment. Creosote in minute dose, frequently repeated during one to three weeks, is a specific for this pathological condition. The terrible destruction of dental tissue by corrosive excretions from the gingival borders is at once arrested by this remedy.

The cause of the second class of dental decay is also a morbid state of the system, which renders the fluids of the mouth destructive to the teeth and propitious to the enormous multiplication of microorganisms which by their acid excretions and their borings prove very destructive. The acid in the mouth in this class has rather more the characteristics of weak vegetable acids than the rapid corrosive action of mineral acids, such as the appearance of the first class always presents. The condition produces a vitiated state of the oral secretions, acid in reaction, and marked by an apparent lack of some deterrent element which in normal saliva and mucus prevents the propagation and activity of bacteria. The latter, in the absence or lack of this deterrent, multiply enormously, and the acid condition of the mouth then may be attributable partly to the vitiated condition of the secretions and partly to the acid excretions of innumerable colonies of bacteria.

There are in the serum of the blood in health certain albuminous substances, pointed out by a number of eminent scientists, which have been called by Hankin "defensive proteids." These proteids have been found in the serum of the blood of different animals, at times destructive to anthrax, again attenuating to the same germs—that is, shriveling and rendering them innocuous; and still again, in other cases, antitoxic or defensive against the toxic excretions of germs; upon which theory has been based the medication in the line of antitoxic treatment for various diseases which now occupies the most earnest attention of the secular as well as the medical mind.

Owing to the presence in healthy persons of these defensive proteids, the secretions of the mucous surfaces are believed to be charged with a sufficient amount of some deterrent substance to render them safe against the attacks of microorganisms which might be taken into the system. Every one living in a great city receives more or less frequently into the alimentary as well as respiratory tracts, dust which is contaminated with various germs of disease, but these germs, coming into contact with the deterrent agent of normal mucous secretions furnished from the defensive proteids, are either destroyed or rendered innocuous, and are cast out. If, however, a change of health occurs by which that function which furnishes to our bodies the defensive proteids is held in abeyance, and we are thus deprived of them, the germs which we take in may inoculate us to our injury, or even to death. The conditions which prevail in the mouth are as follows:—Bacteria are present in all mouths, healthy or diseased, they are present whether there is dental decay going on or not; at times they are in small numbers and apparently innocuous; again they are found in numerous quantities, destroying the teeth with various degrees of rapidity, from a small number of cavities to an apparent melting away of the entire dental arch. They are in all mouths at all times, yet they are almost entirely in abeyance in some mouths while they are rampant and destructive in others. In the same mouth we find them asserting no influence at some periods of life, while at other periods we find them quite destructive. I hold that these facts are due to the character of the secretions which bathe the mouth. When we are in a state of health and our defensive proteids are in normal and protecting quantity, the bacteria are able to survive only in small numbers and in favorable locations; when a change occurs and the deterrent element in the secretions is wanting, we suffer from the destructive agency of myriads of microorganisms.

The appearance of the mouth in this class of etiological factors shows generally very slight inflammation, although the gums are sometimes swollen and bleed very readily. The entire mouth is bathed in acid except after some minutes of mastication, whereby the alkalin saliva has overcome the acid, and the teeth are affected by decay, more or less extensive, which is characterized by a very light brown or chalky-white color and by rapid progress. The treatment of the above class is not so well defined as the first, and remedies have to be chosen with some discrimination from a number which are employed. These are very simple: the salts of mercury, potassium, calcium, charcoal, creosote, etc., are the most potent, administered in doses so small that there is no general systemic disturbance from their use; yet their action upon the diseased conditions of the mouth is so pronounced as to be nearly specific.

The third class in my division of the etiology of dental caries constitutes that form of decay which is due not to a dyscrasia, but simply to acid-excreting bacteria which are lodged in sheltering localities about the teeth. The sulci in the crowns of molars and bicuspids, pits or defects in enamel, malformation of teeth or a crowded condition of them, all afford lodgment for the bacteria of the mouth, and it is here only a question of time when their acid excretions will dissolve the lime salts and decay begins. The only treatment for this class is operative interference.

It seems to me, in conclusion, that the cause of decay of the teeth lies in abnormal or defective conditions. In the first two classes, in abnormal or defective conditions of the secretions of the mouth; in the third class, in abnormal or defective conditions of the teeth themselves. To say that bacteria are the cause of dental decay sounds very much to me like saying that dyspepsia is the cause of dyspepsia. The earlier years of puberty and the period of gestation are especially the periods when the ravages of decay from the first two of the above classes are most pronounced, and then it is that the mouth should be most carefully watched and intelligent medicinal treatment be invoked to preserve the teeth. Treatment of from one to three weeks, according to severity, is sufficient to bring cases under control; in the case of young persons an examination should be made every three or four months during the first two or three years after the condition has manifested itself, and treatment be again resorted to if needed, for it is not certain that there may not be a recurrence of the dyscrasia within this period.

Cleanliness of the teeth and mouth and, when the presence of acid prevails, the use of milk of magnesia, especially at night on retiring, is good. It covers the teeth with an alkalin film against which the acid for hours exhausts itself. This care is a repulse of the vitiated secretions after they have been poured out into the mouth. Medicinal treatment is a stroke aimed at the fountain head (or source) of the infection, and when skillfully delivered frees the mouth at once of its foul condition and its acid excretions.

I am fully persuaded that more than fifty per cent of dental caries is absolutely preventable by medicines internally administered which act specifically in the mouth.—*N. Y. Med. Jour., July, 1897.*

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ANTERIOR PILLARS OF THE FAUCES — ETIOLOGY AND TREATMENT. By George T. Carpenter, M. D., D. D. S., Chicago. Read before Dental Section, American Medical Association, Philadelphia, June, 1897. It is the dark red or reddish-blue color, which is a venous stasis of the pillars and uvula and their shining, sticky, mucous surfaces, that I wish to consider. I find that in a large number of persons visiting my office for dental services this abnormal condition is present. These parts are easily brought to view by having the patient breathe through the mouth. The patients do not complain of a sore throat but of a fetid breath and sometimes a disagreeable taste in the mouth. The venous stasis of the pillars acts as a sentinel, the etiology of which is not found in the erupting molar, but will be found in the tonsil or posterior nares. The tonsil may have little or no inflammatory action, and the crypts may or may not be filled with a cheesy exudate, and still their sluggish condition will produce a foul-smelling secretion and absorption of the lymphatics will follow. Also stenosis and chronic catarrhal conditions of the posterior nares will produce a dropping in the pharynx and keep the pillars bathed with a foul secretion which will taint the breath and produce, through absorption, an abnormal appearance of the pillars. Treatment consists in antiseptic gargles, also an alkalin antiseptic wash, as Dobell's solution, used as a gargle or spray for the throat and spray for the nose. The tonsillar condition may be stimulated with silver nitrate, or the electric cautery may be used to advantage. When catarrhal conditions exist any stenosis should be corrected, and the nares and fauces cleansed every night and morning with an alkalin spray. In addition to this, two or three times a week iodin solution, two to ten grains to the ounce of water, with iodid of potassium and glycerin, will be found advantageous.—*Dental Register, August, 1897.*

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SERIES OF CLINICAL CASES. By Vida D. Latham, M.D., D.D.S., Chicago. Read before Dental Section, American Medical Association, June, 1897. Every practitioner of dentistry, at some time or other, sees cases of this nature, perhaps meeting the disease in its earliest form. If he is able to recognize it and sound a note of warning, even though he may prefer to refer the case to a specialist, he has done a great favor to the patient and has earned his gratitude.

Myeloid Sarcoma of the Jaw.—Not long since I saw a case which had been sent to a dentist for advice regarding a right superior third molar that was troublesome. The patient was told to have the tooth removed, "as the wisdom teeth were of no value," and this was accordingly done. But there was no advice or suggestion of anything suspicious about the thickening of the gum around the outer side of the tooth. After a few months the patient became a medical student, and as the socket showed some irritability a junior teacher and dentist in the university school was consulted. He pronounced the growth nothing but thickened gum, so it was snipped off and thrown into the cuspidor and the place touched with a counter-irritant. In a little while it was thought to be recurring, but the dentist said, "No; it was all right." And as he held a place in operative dentistry and was quiz-master on the subject, the matter was left on his advice. Only a few months later the student transferred to another school and happened to hear a lecture on the subject, the importance of which started a feeling of uneasiness. At this time I made the acquaintance of the student, who consulted me for examination and advice. Truly the growth was small and seemingly innocent and fibroid in character, and I asked leave to watch the case for a short time. Finding that it grew larger, I advised thorough and immediate operation, as I feared a sarcomatous epulus. On account of the position of the former dentist and not wishing to seem to urge operation on a small matter, I suggested the consultation of an older and more experienced specialist than myself. After a little persuasion the patient consented to the removal of a small piece of tissue for examination The opposite end of the tissues from the neighborhood of the periosteal surface, showed the early but rapidly growing and malignant nature of the tissue—a typical myeloid or giant-celled sarcoma. The patient, who knew something of the danger of such a growth, was eager for a thorough radical operation, which was performed by the consulting oral surgeon. After eighteen months there has been no recurrence. The great danger in this case lay in the fact that the growth first appeared behind and on the buccal surface of the gum, near the third molar, and its course of progression would have been up the palate process along the maxillary tuberosity and posterior palatine canal, so invading the antrum and palato-glossal folds. It is believed that myeloid sarcomata are common in the maxillæ, but Bland Sutton says they are rare and as a rule arise in connection with nasal process. In the maxillæ or mandible they arise from the body of the bone.

Small Spindle-Celled Sarcoma of the Palate.—In this case the patient, aged 33 years, had been in perfect health up to six months previous to the time he came under my observation. There appeared a thickening on the left lingual surface of the palate. At first the patient was but little concerned, thinking it only a local irritation, but as it slowly increased in size he consulted a dentist, who told him it was a chronic inflammatory growth and possibly due to his smoking a pipe. The habit was discontinued and the swelling treated by counter-irritation, which gave no relief. By this time the place was a source of annoyance, as the patient could not keep his tongue from it, and he determined to have it removed by his family physician. The latter, upon examination of the growth, found that it extended from the first molar to the soft palate, within half an inch of the uvula, and becoming suspicious of its nature he decided to prepare for a radical operation and gained the patient's consent to do what he deemed best. The growth was periosteal in origin and was thoroughly extirpated, the teeth being extracted on that side and the alveolar border curetted, removing all tissue that looked dangerous or even suspicious. There has been no recurrence.

The differential diagnosis between palatal abscess and sarcoma shows the following points: Sarcoma, springing from the periosteum of the hard palate, appears as a soft, semi-elastic, more or less rapidly growing tumor, affecting the roof of the mouth. A palatal abscess, originating from any of the upper teeth or burrowing backwards beneath the bone and periosteum, or in the soft tissues forming the roof of the mouth, gives rise to pain and inflammation attends its development; it extends more rapidly and gives an elastic feeling of fluctuation. There is the evidence of a carious tooth, and in chronic cases the diagnosis can be made positively by using exploratory puncture.

Sarcoma of the Antrum.—The patient, a well-built boy of 15 years, complained of constant pain in the left upper first molar, which was treated. In about three weeks his cheek began to swell, and on returning to the dentist the boy was informed that the swelling was an abscess. Free incisions were made and no pus found. As he got no better and the pain continued, the patient left his dentist, going to one of the well-known advertising houses, and there was told to have the tooth extracted. This was done, and after the somewhat profuse hemorrhage which followed the pain was better. The swelling, however, did not disappear, and I saw the case upon recommendation of the family physician. The unilateral bulging of the antrum and upper displacement of the eye, the slight amount of pain, together with the history and previous treatment, led to the diagnosis of sarcoma of rapid growth. I gave the patient an unfavorable prognosis and urged a speedy removal of the upper jaw, which was done. Then the soft parts were laid back and the disease found to be very extensive, requiring removal of the entire superior maxilla and malar bones, the zygoma and part of the temporal and masseter muscles; hemorrhage was very severe, but was controlled by iodoform packing and comp. tincture benzoin. In spite of this bold and severe operation the disease recurred and the patient died from exhaustion. Microscope showed the tumor to be a small round-celled sarcoma.—*Ohio Dental Journal, August, 1897.*

HYPNOTIC CREED. The *Hypnotic Magazine* promulgates the following articles of belief, invites opinions, and announces that any proposition proven unsound will be stricken out: 1. The subject or hypnotized person is always responsible for his actions. 2. The subject's moral resistance is as strong in the hypnotic as in the waking state. 3. The subject will not accept a suggestion or a post-hypnotic suggestion which conflicts with his principles or his all-potent instinct of self-preservation. 4. The subject submits to be hypnotized; he can not be influenced against his will. 5. The subject can break the hypnotic sleep and return to his normal state of consciousness, even in defiance of the operator's suggestion. 6. The subject is never unconscious; the subjective mind is always on the alert. 7. The suggestions which can be made to take root most readily in the subjective mind are those which are to the therapeutic advantage of the subject. 8. Suggested sense delusions are accepted by the subject with the subconscious understanding that they are produced merely for the purpose of experiment. 9. A subject of good moral character cannot be induced by hypnotic suggestion to perform an act which he would consider immoral or even undignified in his waking state. 10. A subject of loose morals will exhibit the same characteristics in the hypnotic state, but will refuse to commit a crime which endangers his person (see "instinct of self-preservation," No. 3). 11. A crime committed through post-hypnotic suggestion by a subject (if such a thing were possible) would be assuredly bungled, since the carrying out of a complicated post-hypnotic suggestion entails a return to the state of active somnambulism, in which state inductive reasoning is impossible. 12. The assent of the subject is always necessary to the carrying out of every suggestion. 13. Auto-suggestion is more powerful than the suggestions of another. 14. The only harm which can result to a subject lies in the possible ill results of foolish tests which the subject is willing to carry out.

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RESECTION AND REPRODUCTION OF THE MAXILLÆ. By G. Lenox Curtis, M.D., New York. Read before Dental Section, American Medical Association, June, 1897. Like produces like; this applies to every department in nature. The periosteum under favorable conditions will reproduce the substance it covered. That of the ramus of the jaw will make only the thin lamina of bone which nature has originally placed there, while that of the malar and the body of the jaw reproduces a dense structure differing materially in texture.

If the function of a part be permanently lost reproduction is not a necessity, nature supplying that part only which is required. If the teeth have been extracted with a view of remaining out, the portion of the jaw which is required to nourish them is not reproduced, but where the teeth are replaced and retained, all or sufficient of the bone is reproduced and reattaches them to the jaw. Such I have seen in active use for years.

The only condition I can ascribe for the removal of the periosteum is where it is attacked by disease, such as cancer, and the entire structure is destroyed. When the bone alone is destroyed, as in necrosis, cystic tumors, or from pressure by resistance of a growth, as tumor of the antrum, I see not the slightest necessity for removing this natural sheath, but on the contrary every reason for retaining it? But what can we say for the subject? Partially or wholly jawless, maimed and disfigured for life, a repulsive and pitiable object to others and a shrinking annoyance to himself. Is it not time to call a halt and look this matter squarely in the face?

Method of Preserving Contour of the Jaw.—My method to obtain the best results in the preservation of the contour of the jaw is by retaining the necrosed bone in position until the periosteum has been so strengthened by the reproduction as to allow nature's outlines to be maintained, employing it as an interosseous splint. Where it is necessary to remove the bone, I retain the contour of the face by gauze packing and change from time to time until the bone is sufficiently reproduced to resume its shape. This requires frequent dressing, so that the amount of pus may be kept at the minimum. The teeth are retained in position by means of interdental splints or ligatures. Where the teeth are lost I place other teeth in the opening when the wound is nearly closed, maintaining them by artificial support and allowing the bone to form around them. Where the destruction of the bone has been great and the periosteum too weak to retain the jaw in position during the process of reproduction, I use an interdental splint, in which the upper and lower teeth properly occlude. By hastening slowly, the danger of wounding the dental nerve is materially lessened.

Case in Practice.—In 1886 I operated on a young woman, age

23, with the following history: Four years previous, after suffering much pain in the face, which was swollen, a fistula appeared in the lower jaw, which was diagnosed as being from an abscessed tooth. The gums around the tooth were swollen and inflamed; the molars and second bicuspids were extracted and the pus continued to flow. Her health rapidly diminished, menses ceased and had not returned, although constantly under medical and surgical treatment. Examination revealed the emaciated condition of the patient. She was suffering from blood poisoning, was highly nervous and hysterical, had no desire for food and had lost the sympathy of her doctors and family. In the left inferior maxilla where the tooth had been extracted there were granulations. A boggy condition of the mucous membrane extended all along that side of the jaw. Over the ramus it was particularly inflamed. The probe readily passed beneath the periosteum and far up along the ramus. The patient was then too sick for an operation with a view to best results. The wound was cleansed daily to lessen the amount of pus, and for one month the patient was placed under most rigid restorative treatment with good results. I found that under the local stimulating treatment bone had been sufficiently reproduced to strengthen the periosteum, so that when I removed the dead jaw the contour was preserved. The cause of the trouble I found to be a wisdom tooth lying transversely at the neck of the jaw immediately under the condyle. This along with the granulations and debris was removed. The wound was packed continually until healthy granulations filled in the periosteum; the jaw, minus the teeth, was reproduced with all its usefulness. Complete restoration to health and a gain of twenty pounds in weight followed this work. The nerves and vessels in the jaw were not injured and no paralysis resulted.

Osseous Tumor of the Antrum—Operation.—March 25, 1893, I operated on a lad fifteen years of age, who gave the following history: Three years before, while at play, he ran against a lamp-post, striking the left side of his face and bruising it severely. A year later there appeared on the face, over the malar bone, a hard lump, which continued to increase until it was the size of a hen's egg, preventing the boy from seeing with that eye objects on the ground near by without bending his head. He had not realized any special pain or discomfort from the tumor. Thinking the trouble arose from the abscessed teeth, his dentist extracted the upper left first bicuspid, which showed no evidence of being diseased. I diagnosed an osseous tumor of the antrum and found that the malar and superior maxillary bones were completely destroyed by the direct pressure against them, only the periosteum remaining. Not only was the tumor directed outward but downward, depressing the roof of the mouth and extending beyond the alveolar process, against the buccinator muscle. An incision was made through the periosteum, encircling the teeth as seen in the specimen here presented, in which the tumor and teeth are attached, and it will be noticed that only a small part of the alveolar process remained intact. This with the teeth was removed, the entire side of the face falling into the cavity made by their absence, so completely were the malar and the superior maxillary bones destroyed; only the inferior orbital ridge and zygoma resisting the pressure of the tumor. A profuse hemorrhage followed its removal, but was readily checked by hot water. The wound was packed with aristol and gauze and the contour of the face secured. The periosteum united with sutures. Through this opening the wound was dressed until the shape of the face was permanently restored. Time of operation twenty-five minutes. The following day there was considerable edema, which readily subsided. From day to day the dressing was changed until the periosteum could support itself, and in two weeks the case was dismissed from the hospital. The antrum was douched daily until restoration was complete. An artificial denture was made to replace those lost, to give the normal fullness to the mouth. In this operation there was no external wound, consequently no necessity for ligature and no scarring of the face, which would necessarily follow had the operation been done on the lines drawn in general surgery. The wound completely healed in six weeks with no deformity of the face. I have seen the case from time to time and it is perfectly satisfactory.—*Ohio Dental Journal*, *August*, *1897*.

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REMARKS UPON THE NON-OPERATIVE TREATMENT OF CHRONIC SUPPURATIVE DISEASE OF THE ANTRUM AND VAULT OF THE TYMPANUM. By A. H. Buck, M.D., New York. Read at the British Medical Association, Montreal, Sept. 3, 1897. Recent otological literature is full of treatises which deal with the subject of new operative methods for the cure of chronic suppurative processes in the vault of the tympanum and the mastoid antrum. Of these operations ossiculectomy (for those cases in which the disease is limited to a small area within the tympanum) and the so-called Stacke's operation (for those in which the antrum is also involved) are the two representative types. It is not necessary here to enter into any further details regarding these operations or to discuss their relative merits. Suffice it to say that both of them have passed the probationary stage and are now generally accepted by otologists as safe and effective surgical procedures for the cure of the pathological conditions referred to above. Conceding, therefore, as I do, the value and the safety of these operations, I am nevertheless disposed to believe that they are resorted to in many cases in which the simpler cleansing methods would be found to be quite as effective in curing the disease. I should perhaps qualify this remark by stating that it has reference mainly to cases which are seen in private practice. In the treatment of infirmary patients it is not often possible in our large cities to devote at least half an hour, twice or three times a week, to a single case; and, furthermore, our experience in New York has shown that infirmary patients cannot be depended upon to attend the institution regularly for treatment. But, unless these cleansing procedures are carried out in a minute and painstaking fashion, and at rather frequent intervals (two or three times a week), at best only a temporary amelioration of the disease will be secured. I am satisfied, therefore, that in dealing with this class of patients the otologist is quite right in urging the operative rather than the non-operative mode of treatment. In private practice, however, the conditions are quite different. The surgeon can give to this class of cases all the time that may be required, and the patients themselves can be depended upon to be regular in their attendance. Then again, many private patients object strongly to being subjected to an operation which requires the use of ether or chloroform as an anesthetic, and which may keep them confined to the bed or to the house for several days. It is natural, therefore, that these individuals, when the situation is laid before them, should prefer to have the cleansing or non-operative method of treatment tried first. It is not in every case, however—be it clearly understood—that we can safely offer this choice to the patient. Symptoms may have already developed which point to an extension of the disease to important neighboring organs, and in that case we must recommend strongly the more radical plan of treatment by operation—either Stacke's or the regular mastoid operation. But in most if not all of the cases in which a simple ossiculectomy is performed, and in quite a large proportion of those operated upon by Stacke's method, no such threatening symptoms exist, and consequently we are at liberty to deal with the problem before us in a more leisurely manner. If, in such cases, the opening in the tympanic membrane through which the pus and other products of the disease escape into the external auditory canal is fairly large—say two or three millimetres in diameter—and particularly if it occupies a high position, there can be no question about the propriety of giving the cleansing method a fair trial. On the other hand, if the opening is small—perhaps not more than a millimetre in diameter—or if it occupies a low position, the simple cleansing method is more likely to fail. But even here a limited myringectomy may suffice to overcome this drawback and so place these cases on a par with the others. If, however, the pus finds an outlet through the membrana flaccida, it is better to proceed at once to an ossiculectomy (including, of course, a myringectomy). The necessity for a Stacke's operation or for a mastoid operation in this class of non-urgent cases becomes clear when both the cleansing method and a simple ossiculectomy (including the anvil as well as the hammer) have proved unsuccessful in arresting the foul-smelling discharge.

As regards the details of the cleansing method, it is enough to state here that it consists essentially of only two steps, viz., the removal, chiefly by mechanical means, of all granulation tissue, cast-off epithelium, and detritus from the diseased tympanic cavity or antrum, and the destruction by chemical means of all pathogenic germs. Injections of hydrogen dioxid through variously curved glass tubes play a very important part in the procedure, not simply on account of the germicidal action of this fluid, but largely because the active effervescence, which at once takes place when it comes in contact with decomposing organic material, aids in dislodging the obstructing substances. When once the cavity has been cleared of all these and rendered aseptic, powdered iodoform or one of the more recent antiseptic powders (europhen, aristol, etc.) should be introduced in liberal quantity and allowed to remain there indefinitely. This, in brief, is the mode of treatment which I have termed the cleansing method.—*Medical Record*, *Sept. 1897.*

DIAGNOSIS OF HEADACHES. Pershing has analyzed the symptoms of the diseases in which headache is liable to be a prominent feature and has arranged them in a table, so that by comparing the symptoms of an individual case with the headings and subheadings of the table the probable diagnosis can be quickly found (*Colorado Med. Jour.*, *Jour. of Nerv. and Ment. Dis.*). Headache.—Pain in the head not limited to the distribution of particular nerves. 1. There is organic disease of the brain or its membranes, shown not merely by the severity and persistence of the headache, but also by the occurrence of some more positive signs—e. g., paralysis of ocular muscles, face, optic neuritis or optic atrophy: Jacksonian epilepsy, etc. If delirium or stupor occurs, the headache still continues. Vomiting common. (a) Onset sudden or very rapid, following an injury or occurring in an aged or insane person without evidence of infection. Convulsions, followed by paralysis on side opposite the headache. Sopor and coma with slowness of pulse supreme.—Meningeal hemorrhage. (b) Onset gradual but acute, with fever. A source of intracranial infection or irritation present. Whole course short. General hyperesthesia common in early stage. Spasm of neck, general convulsions and cranial nerve symptoms, such as ptosis, strabismus, etc. Optic neuritis occasional. Temperature irregular.—Meningitis. (c) Onset rapid or slow. Source of purulent infection. Temperature irregular. There may be rigors, followed by fever and sweating.—Abscess. (d) Onset slow. Optic neuritis. Temperature usually normal. No sign of suppuration. Tumor. (e) Onset slow, without fever and intense optic neuritis or slow pulse. Patient alcoholic or syphilitic. Organic disease indicated by spasm or paralysis in domain of cranial nerves, rarely in limbs.—Chronic meningitis.

2. Positive signs of organic disease of the brain or membranes absent, but evidence that blood-vessels are diseased. (a) Patient is past forty. The arteries are atheromatous. Heart often hypertrophied, and albumen usually found in the urine.—Arterio-sclerosis. (b) Age under forty. Headache chiefly nocturnal and accompanied by insomnia. Syphilitic history.—Syphilitic endarteritis.

3. No organic disease of brain membranes or vessels. (a) Headache periodic. Pain unilateral, accompanied by nausea and intolerance of light or noise. Family history of similar attacks or of epilepsy or other neuroses.—Migraine.

4. No distinct periodicity. Pain not unilateral. **Headache appears** at same time as fever, and disappears if delirium supervenes. There is evidence of general infection without any unequivocal sign of organic disease of the brain or its membranes.—Infectious fever.

5. There is no infection, but there is evidence of a toxic substance active in the system. (a) Urine contains sugar. Patient suffers from polyuria, thirst, weakness, etc.—Diabetes. (b) Urine contains albumen or casts or both. Pallor and edema often manifest. There may be a characteristic retinitis or optic neuritis.—Uremia. (c) Urine free from albumen and sugar. Headache worse in early morning and tends to wear off during the day. Uric acid diathesis or gouty deposits.—Gout. (d) History of excessive consumption of alcohol. There may be initiative dyspepsia, insomnia, tremor, etc.—Alcoholism. (e) Perverted digestion. Headache dull, comes on soon after eating, or is associated with the eating of some particular food, and is temporarily relieved by purgatives and intestinal antiseptics.—Indigestion. (f) Patient exposed to lead. There may be a blue line on the gums, colic with constipation or bilateral wrist drop.—Plumbism.

6. No infective or toxic cause, but the cerebral circulation is disturbed. (a) Headache throbbing follows excitement or exertion, and may be associated with flushed face. Increased by coughing, straining or lowering head.—Active Hyperemia. (b) Headache dull, heavy. Return of venous blood obstructed.—Passive Hyperemia. (c) Heart action weak or blood impoverished.—Anemia.

7. No infective, toxic or circulatory cause, but there is a reflex disturbance. (a) Pain associated with the use of the eyes for near work, and is felt in the brow or back of the eyes, or appears to extend from the eyes to the back of neck. An error of refraction is present or weakness of one or more of the extra ocular muscles.—Eye Strain. (b) Pain associated with disease of the nose or its adjacent sinuses. Inner wall of orbit may be tender or headache markedly increased by touching the middle turbinated bone with a probe.—Nasal Headache.

8. No organic, toxic, reflex or circulatory cause apparent. (a) Nerve force exhausted from any cause. Sensations in head may be disagreeable rather than painful, and are described as queer—tightness or looseness of scalp, lightness or heaviness of the head, etc. Spinal tenderness and morbid fears common.—Neurasthenia.

(b) Headache appears and disappears with emotional changes or in response to suggestion, often limited to a small spot at vertex (clavus). Various signs of hysteria may be present.—Hysteria.

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ORAL SURGERY. By Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S., Eng. Diseases of the Glands. *Xerostoma.* In this affection the secretions of the salivary and buccal glands are greatly diminished or entirely suppressed. The tongue is red, dry and cracked, and the mucous membrane of the cheeks pale, smooth, shining and dry. Mastication, deglutition and articulation are rendered difficult and painful. As a rule the general health is good. Very little is known of the pathology of this disease. It is supposed to be due to some affection of the nerve centers controlling the salivary secretion. It is a rare condition and is most often met with in women with neurotic tendencies.

Treatment. The galvanic current is the only therapeutic agent known to have a beneficial effect.

Salivation Ptyalism. Increased secretion of saliva is a constant symptom in most of the diseases of the mouth, especially mercurial and ulcerative stomatitis. It also occurs during teething in infants, during examination of the mouth or throat, and during dental operations. It may result from any local irritation of the mouth, such as biting the tongue, taking irritating particles of food, or chewing tobacco. Certain drugs, such as mercury, iodin, copper and lead produce ptyalism. It is also a symptom of certain affections of the stomach and intestines, and is not infrequent during pregnancy. It may result from any irritation of the trigeminal or glossopharyngeal nerves, or may be purely hysterical. The increased secretion is accompanied by a dragging sensation in the region of the parotid glands and masseter muscles, and by a metallic taste in the mouth. The quantity of saliva secreted may amount to several pints during the day. Some of this is expectorated or runs out of the mouth, irritating the skin of the lips and chin, and the rest of it is swallowed, often upsetting the function of the stomach and intestines, leading to anorexia, emaciation, etc. The saliva is nearly always turbid and may be viscid, or thin and watery; it is often very offensive. Its specific gravity is at first high, even as much as 1050, but later it sinks below normal, even as low as 1001. Its reaction may be acid, neutral, or alkaline.

Treatment consists in removing the cause and prescribing astringent mouth washes.

Parotitis. Inflammation of the parotid gland may result from injury, concretions in the duct of Stenson, foreign bodies, the effect of cold, or as a secondary affection after some injury or disease of the abdomen. In most cases parotitis is idiopathic, and is due to infection by a specific microorganism. *Idiopathic parotitis* (*mumps*) occurs chiefly in children from 5 to 15 years of age. It usually occurs in epidemics, but may occur sporadically; in any case it is due to infection directly or indirectly from another person suffering from the same disease. The period of incubation may vary from three to twenty-one days. The disease begins with pains about the ears, a feeling of tension when the mouth is opened and slight febrile symptoms. After two or three days the gland begins to swell and causes great pain in opening the mouth and in chewing. One or both sides may be affected; the swelling is limited above by the zygoma and below by the stylo-maxillary ligament; the ear seems raised and forced outwards, and the cheek swollen. The submaxillary and sublingual glands, and even the lymphatic glands and spleen may also become swollen. On the subsidence of the inflammation in one parotid, the other, if not already affected, becomes inflamed, and sometimes the testis, ovary or mamma. Usually only one testis is affected, sometimes both are involved; atrophy of the testis and impotence may result.

The *treatment* of an ordinary attack of mumps consists in keeping the patient indoors, giving a laxative, and in covering the part with cotton wool or a poppy fomentation.

Secondary or Metastatic Parotitis occurs most commonly as a sequel to typhoid fever, usually during the third or fourth week. It may also follow upon operations involving the abdominal cavity, or injuries of the generative organs. The symptoms are at first the same as those of the idiopathic variety, but pain is not such a prominent symptom on account of the prostrate condition in which the patient usually is.

The swelling is generally very considerable. Suppuration frequently occurs and is accompanied by high temperature. As the pus forms, the swelling softens and the skin over it becomes red and glazed; after a few days the abscess bursts, as a rule upon the face, but sometimes in the external auditory meatus. The process of disintegration may spread from the parotid to the surrounding parts, leading to suppuration of the masseters and pterygoids, thrombosis of the adjacent veins, and sometimes pyemia. The facial nerve is often involved, causing paralysis of the muscles of expression. The occurrence of suppurative parotitis is always serious and adds to the gravity of the prognosis of the affection it complicates.

Treatment consists in early and free evacuation of pus and the administration of stimulants.—*Brit. Jour. Dent. Sc., Sept. 1897.*

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"LE ROI EST MORT. VIVE LE ROI!" The recent gathering at Old Point Comfort has proven to be in some respects the most important which has taken place in the history of American dental meetings. The scientific factor was on the whole, and as compared with former meetings, of average or perhaps greater importance, measured by the results obtained. But the work accomplished affecting dental organization and dental education in this country are the features which most prominently claimed attention, and for which the meeting will be most memorable.

The circumstances of the meeting were unique. At no time in the history of our calling has so noteworthy and important a gathering of American dental practitioners been held. They have met in greater numbers, but the objects which have heretofore drawn the profession together have been less important in character and diverse in kind. The two great society organizations, the American and Southern Dental Associations, the National Association of Dental Examiners representing the legislative, and the National Association of Dental Faculties the educational motive in dentistry, met with a common purpose—unification and harmonization of their interests for the advancement of dentistry.

That there should be differences, even dissension, where such broad ground was to be covered, and where so many different opinions were to be reconciled, was necessary and unavoidable, but out of the multitude of counsels wisdom asserted herself and a spirit of tolerance prevailed, to the end that the sectional chasm which for years has divided our national professional interest has been at last bridged over, if not obliterated. The American Dental Association, with its long and honorable record of good work accomplished for the advancement of American dentistry, is numbered with the things that have been, and the future of our profession is to find its national outlook and the embodiment of its new hopes in an organization which is to be truly national in character. As President Truman in his able address has truly said, "We have come to the parting of the ways," we have reached a point where, while we look back with sadness upon the death of the old, we reach forward with hopefulness to the birth of this new National Dental Association which has sprung into being not by accident, but at the behest of those who are animated by lofty purpose and that love of their chosen calling which knows no geographical or sectarian limits.

The unification of our national dental interest is now an accomplished fact; but while we rejoice over it and congratulate ourselves that such an advance step has been made, let it not be forgotten that much is yet to be done in order that our new infant shall not die from neglect or suffer for lack of sufficient nourishment. The leaders of dental progress have sounded the warning. Not only have they called for aid, but they have shown by long arrays of facts and figures that our larger representative societies do not receive the support they need in order to force them up and maintain them at the plane of their highest usefulness. Recently published data, as well as the opinions of those most competent to judge, force the conviction that but a very small proportion of the American dental profession give adherence or encouragement to society work. This is not as it should be. The progressive practitioner can no more do without the benefits accruing from dental society work than the society can exist without his encouraging support. The necessity is a mutual one, and as one thrives so does the other. Membership in dental societies has been classed as a professional duty; it is more than that, it is a professional privilege, and for both reasons or either alone no dentist should neglect his society interest. It is only a widespread acceptance of that belief which can insure to our national association the support necessary for its continued existence. Let every member of our profession realize that the obligation in this regard is a personal one, and the success of the new organization will be assured for all time.

The work toward unification of interest manifested between the larger organizations had its reflection in the deliberations of the Faculties' and Examiners' Associations. In the latter, despite the dogmatic and partisan effervescence of a few, the discussions were characterized and happily dominated by a spirit of conservatism and harmony which is a credit and an honor to that body. Whatever exception may be taken to the methods by which some of its members have sought to enforce their views—and such are but a small minority—the results finally achieved should be cordially accepted by the whole profession as a step in advance.

Two important results achieved by the examiners are especially worthy of notice—viz, a revision of the Requirements for Obtaining Recognition, which is now more nearly in line with their right and power to enforce, and the promulgation of a minimum standard of preliminary educational requirement, which, as we interpret it, is technically in advance of the standard prescribed by the faculties for the same purpose. If such be the case, it is highly regrettable that such a difference was not harmonized, and still more regrettable that the reasonable and progressive scheme formulated by the examiners for securing a proper matriculate standard for the schools in the near future was not approved and adopted by the faculties. Whether or not the action of the examiners in this regard may be looked upon by the faculties as outside their sphere, is quite apart from the fact that the plan proposed is an admirable one, and under the circumstances the least that should have been adopted by the faculties. As the matter now stands on the question of a standard of preliminary requirement the Faculties' Association has retrograded, or at least has made no advance, which in this age amounts to the same thing.

The record of the last meeting of the National Association of Dental Examiners gives much promise of a realization on the part of that body as to just where their strength as a coercive factor in our dental educational system lies. We have taken exception to some of the acts of that body for the reason that in our judgment they indicated a tendency to usurp authority to which they were as an official body not entitled. On the other hand, we clearly recognize that through the powers vested in dental examining boards throughout the states the national association has it within its power to exercise a positive influence for good in dental education by preventing the licensing of incompetent men as practitioners of dentistry. While the exercise of that power is hedged about and conditioned by the diversity at present existing among the dental laws of the several states, the prime fact remains that the examining boards are the keepers of the portals of entry into dental professional life. With the work and methods of the colleges they have nothing to do, nor can they trench upon that terrritory without weakening their legitimate influence for good. The proceedings of their last meeting indicate that the more judicial members have grasped that fact, and it is cause for congratulation that out of the chaotic mass of conflicting opinions heretofore manifested in this branch of dental interest, the essential factor upon which all of their coercive power for good rests is being realized, and we trust will be utilized. We would further commend the tendency toward the formation of a committee of conference between the Examiners' and Faculties' Associations. As the index of a higher civilization is the spirit of arbitration, so is the tendency to adjust differences of opinion between these two bodies evidence of a healthy tendency toward mutual reasonableness in carrying out the important work in which they are jointly concerned. When the record is complete, and the history of the Old Point Comfort meeting is written, we believe that the greatest good which its pages will show will be the decided progress made toward harmony and united effort in the uplifting of our profession.—*Editorial in Dental Cosmos, Sept. 1897.*

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ANCIENT METALLURGY. By Henry Leffmann, M. D., D. D. S. Read at Odontological Society of Pennsylvania, Feb. 13, 1897. Every one who has any knowledge of the history of chemistry knows that at one period the efforts of investigators were largely directed towards producing the precious metals from cheaper sources, and especially from the so-called base metals. As in so many other cases, however, accurate information as to the aims and methods of the alchemists is not widespread, and it was partly with a view of bringing some trustworthy data before you that I offered this paper. A very brief review of some general historic questions will be appropriate as an introduction. The origin of chemistry is lost in the obscurity of antiquity. Even the derivation and significance of the name have been subjects of dispute. The Greek form ''chemeia'' is first noted in a work of the fourth century of our era, although doubtless much older. It is now regarded as a Greek rendering of a name applied to Egypt; the word also means black, and various suggestions have been made concerning this. An eleventh century writer defined chemistry to be the art of preparing silver and gold.

Metallurgy must have been one of the earliest phases of chemic work. This would be expected *a priori* and is shown by the allusions in the earliest records among various nations. The Hebrew Scriptures are regarded as containing references to six metals—Au, Ag, Cu, Fe, Pb and Sn. According to Pliny, the word metal (Gr. *met' alla*) is derived from the fact that they occur in association with others in veins, but other meanings are also given. The precious metals, gold and silver, which occur native and have many striking properties, were in use at an early period, and there is evidence of the use of iron in Egypt in very early times. An incidental reference, showing the considerable antiquity of common metallurgic operations, is that in Proverbs xvii, 3: "The fining pot is for silver, and the furnace for gold: but the Lord trieth the hearts." The date is probably 500 B. C.

Positive evidence of the antiquity of the use of certain metals is obtained from the remains of ancient cities and temples. There has been so much successful digging during recent years that much of the hitherto-accepted ancient history has been overthrown, and it is unwise to express positive opinions as to the details of ancient civilization; but the following notes collected from some recent authorities, and seemingly trustworthy, may be offered: Schliemann found in one of the layers in the mound at Hissarlik, supposed to be remains of Homeric Troy, articles of gold and silver, a bar of pure copper, and shapeless masses of lead. Leaden objects are uncommon among Egyptian remains, but Diodorus states that sheet-lead was used in the hanging gardens of Babylon. The oldest coined money known is that of Lydia; it was an alloy of gold and silver. The Greek and Roman bronze coinage from 500 B. C. to 50 B. C. contained from three to thirty per cent of lead. This may have been put in to render the metal more fusible, but it may also have been a deliberate debasement by the government. References to lead occur in Homer and several other ancient writers. Mr. Eckfeldt, assayer at the United States mint at Philadelphia, has kindly given me a summary of the analyses of the Roman gold and silver coins in the mint collection. From this it appears that during the pagan period the coins were generally nearly pure metal.

In excavations at the site of the palace of Sargon, at Khordsaba, in 1854, votive tablets of different materials were found, to which a date of 700 B. C. is assigned. Four of these were examined by

Berthelot; one is nearly pure gold, one nearly pure silver, one an alloy of tin and copper, much oxidized, and one magnesium carbonate. Another ancient article, a fragment of a vase, from a similar source, was found to be nearly pure antimony. This fact is quite remarkable, because pure antimony is even to-day very rarely employed, though its alloys are common. A votive figure from the same place was found to be pure copper, oxidized, however, to considerable depth.

These isolated instances are sufficient to show how early metallurgic operations began. Before passing to the consideration of alchemy, I wish to call attention to a feature of ancient metallurgy that has little to do with dentistry, but will be interesting because new to many. I refer to the use of lead pipes. This was quite familiar to the Romans. Tons of lead pipe have been dug up in various parts of Italy, and it has also been found in other parts of Europe that were under Roman domination. This pipe was made by folding sheets and securing the junction either by running melted lead along it or by the use of cement. Very often the name of the property-owner or of the plumber was imprinted on the sides of the pipe. Lanciani, the Italian archæologist, has described many of these inscriptions, and we learn, among other things, that women-plumbers were quite familiar to the ancient Romans. Such names as Julia Paula, Fabia Glycera, Aurelia Irene are among those given by Lanciani. Vitruvius, a Roman writer on architecture, who lived about the beginning of the Christian era, refers to the danger of chronic lead-poisoning from water passing through lead pipes.

Let us turn our attention to the special topic of alchemy. Whatever may have been the aspirations and efforts of the ancient Greeks and Hebrews towards the transmutations of metals, they have left no definite evidence in their literature of efforts in such directions. The Jewish mind, in antiquity at least, was not scientific; and the Greek mind failed to grasp the true scientific method; in fact, the Greek philosophers disdained and condemned systematic observation and experiment. In later centuries works were written and fraudulently ascribed to noted ancient personages, such as Moses, Democrites, Hermes, Solomon, Alexander, or Cleopatra. Indeed, it is very difficult to separate fact from fable and genuineness from fraud in this line of inquiry. As an example of this kind of apocryphal writing, I will refer to a paragraph in a manuscript of the eleventh century which is termed the "Diplosis of Moses"—that is, a receipt originated by Moses for doubling the quantity of gold. A somewhat confused list is given, in which the words copper, sulphur, arsenic, lead, and sandarac are mentioned, though there is a little uncertainty in some of the terms; then a process of manipulation, which lasts for three days. We are then told that the added alloy will all be converted into gold, with, as the writer wisely adds, "the grace of God."

Within the past decade considerable accurate information concerning the alchemists has been brought into a readable form by the labors of the well-known French chemist, Berthelot. It had long been known that there are in some of the great European libraries Greek manuscripts on alchemy. Under the patronage of a department of the government of France, and assisted by various specialists in archæology and philology, Berthelot succeeded in sifting out much important matter from these writings and making fac-similes of some of the texts and illustrations.

The oldest of these manuscripts is now in the library at Leyden, in Holland. It is a papyrus, partly in Greek and partly in demotic character, found in a tomb at Thebes. It is believed to have been written in the third century of the Christian era, and is the oldest authentic manuscript of Egyptian alchemy. It is probably one of the few books that escaped the general destruction of books on alchemy and magic ordered by Diocletian about the close of the third century. It contains a long list of metallurgic receipts written in bad Greek, and is considered to be a sort of memorandum receipt-book of a metal-smith. The receipts show that a large part of the earlier alchemy was devoted to deliberate falsification. Manuscripts of later date, though still quite ancient, are also known. In these are found allusions to the relations between the planets and the known metals, also pictures of apparatus, and many mystical signs and obscure formulæ. I have had a few of these reproduced as lantern-slides, which will be shown later. The text of the oldest Leyden manuscript contains over one hundred receipts, from which a few may be taken as examples. Unfortunately, the translation is not always positive. Names that seem familiar and intelligible to us may not have the significance that we assign to them. Thus, magnesia is now understood to mean magnesium oxid, but in ancient writings it often means an iron oxid, magnetic oxid (Fe_3O_4), or even some other dark mineral. Sal ammoniac now refers to ammonium chlorid, but originally it was applied to another substance not definitely understood. The term "chalk" is used with reference to a form of clay used as a flux.

There is some prominence given to receipts for the manufacture of an alloy called "*asem*," which is sometimes made of copper, tin, and mercury, sometimes of tin and mercury alone, sometimes more complex. Here are some translations from the receipts: "*Manufacture of Asem.*—Tin, twelve drachms; mercury, four drachms; Chio earth (a sort of clay), two drachms. Add the powdered earth to the melted tin, then the mercury, agitate with an iron rod and allow to cool. *Another Receipt for Asem.*—Take tin in small and soft pieces, four times refined, four parts; pure white copper, three parts; asem, one part. Melt these and then purify the mass several times, and it is ready for use. It will be asem of the finest quality, which will deceive experts." Here we have an evident intention to deceive by an alloy resembling silver.

Another receipt gives a method for augmenting gold—namely, adding an alloy of copper and lead, with perhaps zinc, for some of the terms used are obscure. You will all doubtless be interested in a receipt, written more than sixteen hundred years ago, for making gold-solder: "Gold, two parts; copper, one part; melt and granulate. If you wish a more brilliant color, add a little silver."

It is not necessary to multiply details. The text of these receipts shows a merely empiric metallurgy. Here and there we note a mystical trend, which becomes more marked in later writers. The ancient conception that all matter originates from one form contributed towards a belief in transmutation, and when motive of cupidity had led to the discovery of methods of imitating the precious metals by alloys which deceived even experts, it was no very great step to self-deception and the development of the futile search for the philosopher's stone.

An interesting feature of the early metallurgy was the supposed relation between the metals and the planets. We retain many traces of this to-day. Lead-poisoning is often called saturnine poisoning, silver nitrate is called *lunar caustic*, the preparations of iron are called martian preparations. By a chance, the number of moving stars visible to the naked eye is also the number of days in the quarterly period of the moon, and interesting usages have grown out of this coincidence, the discussion of which is not appropriate here. Various coincidences of a superficial character tended to connect the metals with the planets. The brightness of the sun accords with the rich brilliancy of gold; a very ancient allusion to this is in one of Pindar's odes. Similarly, the whiteness of silver corresponds to the paleness of the moon. The redness of Mars suggested iron, the bluish tint of Venus accorded with the lustre of the salts of copper. The dullness of the lustre of lead suggests a comparison with that of the planet Saturn. The assignments of Mercury, "the sparkling," and Jupiter, "the resplendent," have varied somewhat.

The list of relations between planets and metals has not always been as we now give it. In the earliest times certain alloys were regarded as distinct elements and classified as such. Thus, a natural alloy of gold and silver, called "electrum," and supposed to be a pure metal, was assigned to Jupiter. Tin was originally assigned to the planet Mercury, but later to Jupiter, when the metal, mercury, then called *hydrargyros*, was assigned to the innermost planet, to which its quick motion and sparkling lustre well suit it. Mercury was not known to the most ancient nations, but appears to have been discovered about 300 B. C. It was at first regarded as a sort of allotropic silver, if I may use a modern term, and represented by a crescent reversed, silver having been represented by the crescent upright. The notion that the native alloy of gold and silver, called electrum, is an element is found as late as the sixth century, in the works of Olympiodorus. Concerning this alloy there arose the not unnatural view that it could be made to yield either gold or silver at will. At the present day such a property would at once be regarded as proof of the existence of the two metals in the mass, but in earlier times such an explanation would not be suggested. The precipitation of copper from its solutions by the action of iron was regarded as the conversion of iron into copper; the small button of silver obtained by cupellation of lead-ores was regarded as a conversion of lead into silver. We know now that the silver is present in the original mass, but these ideas, which seem so simple and obvious to us, are matters of comparatively recent development.

The Egyptian alchemists regarded lead as the source of other metals, and as containing the transmuting agent; indeed, the term which we now translate lead originally covered any metal or alloy that was white and fusible. It will not be necessary to follow this phase of the subject further, and I pass to some brief allusions to forms of apparatus.

Enjoying as we do at the present time the benefit of instruments of precision and methods of inquiry by which opaque materials are open to our examination, we cannot appreciate the difficulties of manipulation under which the earlier workers labored. Even as late as the year 1777 we find Carl Wilhelm Scheele using pigs' bladders for collecting and studying the gases of the atmosphere.

The forms of apparatus that are figured in the alchemic manuscripts are principally those of distillation and crucible operations. Those that I will show on the screen are copies of Berthelot's *facsimiles* from a manuscript of the eleventh century now at Venice. There are inscriptions on various parts of the figures, and probably some of these were actually written on the apparatus, for these workers often mixed mysticism with practical ideas. Figures of similar apparatus are found in a fifteenth century manuscript now at Paris, and although there are some changes, yet we are still struck by the slowness with which progress was made when the lapse of four or five hundred years did not bring about complete abandonment of the older forms.

In regard to ancient metallurgic operations, it must be borne in mind that the ancients worked largely with mixtures of various ores, by which they obtained alloys at once, and, under the views then generally received, these alloys were regarded as single substances. We may smile at this; but when the nineteenth century began, chemists still regarded caustic soda as an elementary body. It will not be worth while to pursue this subject further, for it will become tedious. Indeed, I fear there has already been too much archæology and too little metallurgy. Before I pass to the lantern illustrations I wish to say a few words concerning the modern views as to the nature of alloys. Students often ask me if alloys are mixtures or compounds. If I pause to reflect before answering the question, the answers that float successively through my mind are: Yes, no, both, neither, I do not know. The fact is, that until we can exactly define what we mean by mixture and combination, we cannot answer the question. We can, however, be sure that several different degrees of association exist in many alloys, and the probability is that most of them contain some of their constituent metals in a degree of association as close as we could expect in a combination, and this compound is mixed with the mass of the metal that is excess. For example, an alloy of ninety parts of silver and ten of copper probably consists of a compound of the two metals dissolved in—that is, mixed with—silver. It is, moreover, quite evident that the properties of many alloys are materially affected by slight impurities, e. g., by the slight oxidization which almost all metals undergo when melted, and I think is an interesting line of research open to the one who will prepare alloys of absolutely pure ingredients.—*International Dental Journal, Sept. 1897.*

* * *

OXYCHLORID OF ZINC. H. T. King, D.D.S., Fremont, Neb. Read at Nebraska State Dental Society. I wish to call your attention to something formerly much used in dentistry, but which the older men in the profession seem to have gradually ceased to use and of which I fear the younger men have never learned the value. Previous to the introduction of the zinc phosphates, oxychlorid, under that name, or as osteo-plastic or os-artificial, was much used for root filling, pulp capping and temporary filling in live and dead teeth. Our modern plastics withstand the wear or mastication much better than oxychlorid and I can readily see why that material was so quickly displaced as a temporary filling, but I am old-fashioned enough to still think it sometimes indicated in root-canals.

You know the old mummifying idea has been revived and emphasized. Recently devitalized teeth are to have the bulbous portion of pulp removed, a mummifying paste placed over the opening to canal and "the pulp in root-canal can be made to serve as their own root-canal fillings." Simple, isn't it? That disposes of all recently devitalized teeth. There still remain, however, those teeth we are constantly dealing with where the pulp has been long dead and is disorganized. For these we have had promulgated within the year a new method by which "a root-canal, whatever its length, whether straight or tortuous, whether filled with semi-devitalized matter or putrescent pulp and fetid gases, can be disinfected and filled within a period of five minutes." This you know is the new "chemico-metallic method."

I said the idea of mummifying pulps had been revived. If you will read the literature of twenty-five years ago, you will see that it was quite common to have the pulp in a tooth mummify. The difference being that at that time they did not want mummified pulps and were careful to use some method to avoid bringing about that condition. Listen to some quotations and discussions of twenty years ago: "The failures in preserving the vitality of exposed tooth pulps by oxychlorid of zinc, as formerly applied, have revealed the fact that chlorid of zinc in strong solution dries the pulp tissue and mummifies it. Admitting this a fact, chlorid of zinc would seem to specially recommend itself as an application to root-canals in which a portion of pulp tissue remains."—*Dr. Rehwinkel.*

"I am not an advocate of capping, but when the pulp has given no trouble and is very little exposed I use an oxychlorid cement. If the pulp dies under it, the cement has often the power of mummifying it."—*Dr. Cryer.*

"Oxychlorid of zinc is well adapted for covering pulps. Such fillings seem to impart antiseptic or embalming properties to a devitalized pulp to such a degree as to have obtained for this article an unwarrantable reputation for preserving it alive."—*Dr. S. B. Palmer.*

"Chlorid of zinc has often been introduced into canals to save pulp, and has converted it into a hyalin body that has been a perfect filling, without any change in color of teeth."—*Dr. W. H. Atkinson.*

You will find in reading the history that the mummification of pulps was a condition frequently found, but no one at the time thought it a desirable one. If

"Cæsar dead and turned to clay
Stopped a hole to keep the wind away,"

his imperial majesty could do no more harm. On the other hand, Ptolemy II embalmed in the highest style of the art would have been a breeder of pathogenic microorganism within fifty years if he had not been packed away and kept dry. Did you ever think of the fact that mummies are found only in a very dry climate? and do you think that a root-canal will remain dry if the contents is only a dried and shriveled-up pulp? I do not and cannot believe it to be good practice to intentionally leave dead pulp tissue in a tooth.

Admitting that there may be a small amount of tissue that needs mummifying, I hold that there is nothing better for the purpose than chlorid of zinc, and that, combined with the oxid, it makes as good a filling as can be used in root-canals. Do not take my word for this, but note something men who have been thinkers, teachers and successful practitioners have said on the subject:

"I always fill the pulp cavity with osteo-plastic. That is the thing, as I understand it, and there is nothing better. It acts as a disinfectant and is an excellent filling for the root."—*Dr. Clowes.*

"A thin, almost fluid mixture of the oxychlorid of zinc filling is best adapted for this purpose. Although not so fluid as a gutta-percha solution, it has this great advantage, that it will exert its drying and preserving or mummifying effect upon the tissue remaining, incorporating itself therewith and preventing any future putrefactive action."—*Dr. Rehwinkel.*

"For permanently filling the pulp cavity, carry a small pellet of cotton to the extremity of the root, pack solid and complete with oxychlorid of zinc. The oxychlorid, so long as it retains its chlorin, will remain as a constantly present preventive against future development of spore."—*Dr. Rogers.*

"Its application to root-filling has been very satisfactory with many of the best men in the profession. It can be carried to the extreme ends of the roots of teeth. Its antiseptic properties lessen the likelihood of periosteal difficulties, and there is not that incompatibility existing between devitalized teeth filled with this in the root that there seems to be when metal is used."—*Dr. Howard.*

"I am in the habit of filling (roots) always with oxychlorid of zinc, because of the antiseptic character of the chlorid. It prevents further decomposition, so far as I know."—*Dr. Allport.*

Speaking of immediate root-filling, Dr. Ottolengui has said: "I think that a coagulant is here indicated and that the one better than all others is chlorid of zinc. The pulp being removed and the medicament applied, what results? The escharotic property is exerted at the point immediately in contact, and the animal matter is destroyed. But this action is circumscribed. Somewhat deeper a coagulum is found. But there is another property which this agent possesses, and that is the mummification of animal tissue. This, I conceive, is what occurs in the minutest portion of the tubuli."

Some one will ask, what will happen if this material passes through the foramen? It will hurt, just as any escharotic brought into contact with soft tissue will cause momentary pain. This, however, ought to be of short duration. I do not think it well to allow any root-filling to pass much beyond the end, but know of no reason for expecting more trouble from a little oxychlorid of zinc than any other filling material. One more quotation: "Chlorid of zinc locally applied is recognized as among the most efficient agents known for promoting healthy granulations, as in addition to its escharotic properties it appears to exercise a greater influence over the vital action of neighboring parts than other caustics; the separation of its eschar leaving healthy and vigorous granulation. It is equally efficient as an antiseptic and disinfectant. The antiseptic and stimulating action of chlorid of zinc is of a most beneficial character, inducing in many cases better organization of the tissues in the living parts to which it is applied."—*Dr. D. D. Smith.*

Oxychlorid of zinc as met with in the dental depots consists of a watery solution of chlorid of zinc in one bottle and the powder in another. The powder having been prepared for use as filling material, has mixed with the oxid of zinc such materials as powdered slate, flint, feldspar, silex and borax—this to improve the color and give hardness. Particles may be found too coarse to enter a fine canal. For that reason I prefer the oxid alone; mixed with the fluid it gives a dead white and is superior to paper or anything else for lining frail teeth to improve their color. The oxid of zinc can be found at any drug-store, and the fluid may be prepared by placing zinci chloridi ℥i in a flat porcelain or glass dish and allowing it to stand a few days in a damp place. It will take from the atmosphere water enough to deliquesce, or you can make your liquid by fully saturating muriatic acid with metallic zincs, allowing it to stand a day or two uncorked. Either solution should be filtered before being bottled for use. Its strong affinity to water is one of the best points in favor of this material for root-canal fillings. You all know that in the use of gutta-percha the prime requisite is absolute dryness. This I conceive is very difficult to obtain in many canals we find. I feel certain that hot air will not dry them and have never seen a root dryer that was fine enough to go where we are able to put some of the fine bristles we use.

If you attempt to work chloro-percha into a canal that is not dry, the material will not leave your dry broach to adhere to the walls, but will come back. Not so with my material; its affinity for water is greater than the mechanical hold on the broach and it will stay. The only effect moisure in the canal can have is to make the mixture a little thinner.—*Dental Review, Sept. 1897.*

Increase of Life.—Mortuary statistics show that during the last twenty-five years the average life of woman has been lengthened eight per cent. The average life of man has also been increased five per cent.

Letters.

ST. LOUIS LETTER.

St. Louis, Oct. 21, 1897.

Dear Digest:

At the last regular monthly meeting of the St. Louis Dental Society, the president of our state board of dental examiners gave a very interesting account of the work done by that body since its appointment last July. Law-abiding dentists know too little of the immense amount of work involved in making a good dental law effective, and it is only to be regretted that every dentist in the state did not hear the clear and concise description of the details of the work given to the few members of the St. Louis Dental Society.

By the way, why is it, with our city growing larger and the number of dentists increasing every year, that the attendance at our dental society steadily decreases? Does anyone know? This condition is general, not being peculiar to St. Louis, and deserves attention.

Dr. Keith, of whose illness you were advised in our last letter, is now on the road to recovery, but we are to lose him, as he will go to Asheville to live so soon as he is well enough to travel. We are hoping he may gain health and strength in the mountains and come back to us in the spring. Yours truly,

St. Louis.

PHILADELPHIA LETTER.

Philadelphia, Oct. 12, 1897.

To the Editor of the Dental Digest,

Dear Editor:—As we were like many of those who were trying to get an outing, we did not migrate back to Philadelphia in time to send you a letter for September. Those who went abroad, with the exception of Dr. Bonwill, who went to the World's Congress, have all returned—Drs. E. T. Darby, Matthew Cryer, D. N. McQuillen, and Edward C. Kirk. Dr. H. C. Register's country home has been entirely destroyed by fire. The loss is $25,000.

We regret to learn of the sad accident which resulted in the death of Mrs. J. H. McQuillen, the widow of the late Professor McQuillen. She was on a pleasure trip through New York State with members of her son's family, when the derailing of a car caused her death. Her son, Dr. D. N. McQuillen, was absent in Europe at the time—

on shipboard, indeed, on his return. Dr. J. D. Thomas and a few of Dr. Daniel's most intimate friends chartered a tug and met the vessel, and with great thoughtfulness and kindness broke the sad news to him. We extend to him our sympathy in his bereavement.

Again we have heard from Dr. Edward C. Kirk. We will call attention to a few points. If he does not change his language we shall never notice anything he may have to say in the future.

"Quaker" had this in his May letter to the DIGEST—"The *Dental Cosmos* in a recent editorial has offered to the profession its apology for neglect of duty, by saying: 'We were not favored with a copy of the report for publication in this journal, which may in some degree explain the absence of comment upon it on the basis that but a minority of the profession have read it. Certainly it is not lacking in features interesting and important enough to arouse the attention of the most apathetic.'

"While the editor may not have received a copy direct, he evinces that he knows well where it was published—in the DIGEST—and that he has seen it, as he seems to appreciate its value and sarcastically regrets 'that but a minority of the profession has seen it.' The truth of this last statement might be questioned. Why has he not acted in the premises before?

"This position is the more peculiar in the light of the fact that his journal has exclusive control of reporting the proceedings of another association, and for ten months has failed to give to the profession the details of that meeting in which he himself took part, the import of which is of such vital importance to all who hold the fair name of the profession dear to the heart, and yet the *Dental Cosmos* is 'devoted to the interests of the profession.'"

All the above can be answered by stating that it is true or that it is not true, and this is Dr. Kirk's reply: "The pathological condition manifested by his effusion is one which presents an interesting and somewhat complex clinical picture. A study of the symptoms, however, will enable anyone familiar with the disorder to at once recognize it as a case of *megalocephalitis*, that is to say, a chronic case of big-head, complicated with an intercurrent attack of sore-head. It is not, as has been suggested, a condition which would yield to a course of treatment with Lydia Pinkham's Famous Vegetable Compound, for the disease is quite incurable, running a chronic and very irregular course which invariably terminates fatally."

In a letter published in the September number of the DIGEST Dr. Kirk takes exception to our August letter, and this is his chosen paragraph: "No, if the Quaker sore spot still continues to provoke these evidences of reflex disturbance, and the Famous Vegetable Compound has not brought relief, a season of rest and quiet may help, if not the sufferer, at least those who are within reach of his twaddle."

This is the language of the dean of a university, the editor of a dental journal. Where are the ethics of the profession? If this were laid before the profession, would they say this was gentlemanly or within the language of the code? Undoubtedly the editor of the DIGEST was correct when he once stated in an editorial: "Unless the editor (Dr. Kirk) considers that the ethics governing ordinary mortals do not apply to him." QUAKER.

BALTIMORE LETTER.

Dear Digest: BALTIMORE, Oct. 21, 1897.

Our state society came together one evening last week for a quarterly meeting and the occasion was an enjoyable one. The president of the organization in appointing his committees left out the old stagers and named the young and untried men. This seems to have had the effect of encouraging the boys and evidences of enthusiastic interest in the next annual are cropping up on every hand. The regulars are not sore over this apparent slight; on the contrary they enjoy the relief from responsibility, and are watching the youngsters with interest. On the whole the society is in a more vigorous and flourishing condition than ever before, and we predict that the democratic policy of the present administration will strengthen and improve its condition.

A pleasing feature of the last meeting was the presence of men prominent in professional matters who have not heretofore been in attendance. Dr. Montell read a paper on pyorrhea, which was discussed by Drs. Harris, Grady, Keech, Mills and others. The youngsters seemed a little afraid to take hold of the discussion, but who blames them? I should say, perhaps, that no agreement was reached as to cause and no infallible remedy was suggested for the cure of this disease.

By the way, did it ever strike you that if we were to fine every man five dollars who should mention the subjects of pyorrhea or pulpless teeth in dental meetings, and with the sum thus raised pay a competent commission to solve some of the as yet unsolved problems, we would profit by it? Or if we could only make it retroactive, just go back one year, wouldn't that sum be a corker? We could put up a building in Washington and support our commission like nabobs. But then there is a gloomy side to this—we shouldn't have any dental literature, nothing about which we know all to discuss. We should be reduced to the extremity of the tramp in "1492," who deplored that he had "nothing to think but thoughts, nothing to say but words," etc. And then at our dental meetings we'd just have to sit 'round and twist our thumbs and look sad while we waited on that commission. Then possibly the commission would get fond of the life in Washington and delay the report, and we might have to depart in peace without beholding the glory of a new era in pyorrhea. Guess we'll have to stick to the old order of things. Did you yawn? Oh, well, we are training a profession of orators and we shall have to put pebbles in their mouths and make them talk to the waves of the sea.

Dr. Burgess, one of the demonstrators in the Baltimore College of Dental Surgery, was married last evening, a novel feature of the occasion being the attendance of the students of the college (about 250) in a body. The boys forgot to leave the college yell home and polite folks thought they were Indians. We wish the Doctor and his fair bride a long and happy life.

During the past week a graduate of the Ohio Dental College applied to our examining board for permission to practice dentistry in this state. In addition to his diploma he had certificates of registration in five different states, four of them secured for successful examination. He was informed by the board that he would have to pass an examination and in the meantime, if he secured employment which was approved by them, he might be granted a temporary permit to practice. Is there not food for reflection for the citizens of these United States in this action? Here is a young man with a good college record, who locates in the far west, and finding the rigors of the climate too severe for him, he moves over into another state. Still not improving, he works his way through five states till he reaches Maryland, with passports that ought to take him round the world, and is told with imperial dignity that he must stand up in the corner and be a good boy for a stated season. In the meantime if he should incidentally run out of funds, or even starve to death, while educational institutions, state governments, etc., attest that he is equipped to practice his profession, it is no matter; he must keep out of our back yard.

Your correspondent recalls an incident which occurred at Old Point last summer. A student who graduated well at a Baltimore school went home to Virginia to await an opportunity to take the state board examination. In the meantime, a professional friend being taken sick, he was called in and as an act of charity helped his sick friend out. This assistance lasted but a few weeks; but a rival in the same town complained to the different members of the board, and when examination-day came round he was promptly thrown and denounced as an outlaw. A member of the board said to one who appealed for the young man, that it was useless for him to deny that he had been practicing since leaving college, as it was plain to everyone that he handled his instruments and materials as dextrously as an old operator. Thus his very proficiency damned him. Is it any wonder that in the State of Virginia more than a dozen special bills passed the legislature, granting the beneficiaries (not all graduates) the right to practice dentistry without being subject to the whims of the examiners? *The way to make a law odious is to enforce it odiously.* Go easy, brothers in Maryland.

Yours always, ORIOLE.

NEW YORK LETTER.

NEW YORK, Oct. 16, 1897.

To the Editor of the Digest,

MR. EDITOR:—Dr. Schwarz's reference to the artistic in connection with regulating the anterior teeth has been emphasized in our mind during the month by watching the demonstration of cases before and after by models, and in one case we saw the whole operation, and much pleasure expressed by the patient with the result. These models will ere long be illustrated in our journals. No controversy can be had over such demonstrations. Talk has become cheap, this is the age for demonstrated ability, and we think it will make societies more attractive. We predict that in the future there will be a larger field of work along the line of correcting irregularities in the adult teeth. Dr. Farrar's papers have been advocates for this work. The present methods will avoid much of the agonizing crucifixion of former operations. Some day we shall find that the practice of dentistry is not the cruel inquisition that is now so commonly charged against it.

The monthly meeting of the Central Dental Association of Northern New Jersey occurred on the 17th, and an excellent paper was read by Dr. J. Morris Leonard, of Connecticut, on which of the two national college associations has accomplished the most good for the elevation of the dental profession. A full program of the November meeting and the titles of some papers to be read during the winter were also given.

At the October meeting of the New York Odontological Society, Dr. Henry N. Dodge, of Morristown, N. J., reported an interesting case in practice—"Reciprocating Tooth Movement; A Study With a Sequel," which was illustrated by photographs. The paper of the evening was "Fractures of the Maxillæ," by Faneuil D. Weisse, the new dean of the New York College of Dentistry. Dr. M. N. Nagle demonstrated a new method of making the interdental splint.

The New York *Herald* of a recent date reports that Dr. Evans will found a very large dental college in Philadelphia. He has for many years talked of his purposes in this regard, and during his visit in 1876 conferred with many. The opinion has often been expressed, that could he commence this movement while living it would be a source of much gratification to him to see the success of his project. There are so many slips in the intended disposal of property, such as in the Tilden estate, where a library was planned for, and many others could be noted. All that can be hoped, from the large ability Dr. Evans has in finance, is, that ultimately our much handicapped profession will have the advantage of some of the thirty-five millions reported to be possessed by him.

Dr. Daboll and wife, of Paris, sailed for home this month.

We note statements of doubt regarding the use of wood for canal fillings. It smacks a little of egotism, though it probably is not so intended. Wood is not perfection, but it is very practical. Why not show a few methods in this artistic regulating by silk? It would tell its own story to many who could also make it successful.

The latest scientific discovery bids fair to outshine that of the X-ray. Dr. Elmer Gates, of Washington, D. C., has invented a microscope which exceeds the power of the best present microscope as much as the latter exceeds the power of the human eye. It will magnify an article three million times its diameter, and the inventor believes he will be able through it to photograph images one hundred million times the diameter of the original object. This of course opens up a new world of scientific investigation, and now the study of the structure of the most infinitesimal cells may be successfully prosecuted. Dr. Gates says:

> "We may now hope to learn something about the living units of which a cell is composed, and to study minutely the effects of the psychologic activity of cells upon their own anatomy. Cells, as I have often taught, have minds, because they can feel and adapt acts to ends. They differ from dead organic matter because they can feel stimuli and respond. Now, only mind can feel and respond adaptively. Hence cellular life is mind, vitality is mentality, and physiology is psychology. Cells are, therefore, the psychologic units of the body. It follows that the phenomena of metabolism are mental phenomena, or rather the results of mentation. The processes of health and disease are consequently processes of mentation. Mentation in its simplest form is found in cells, and it is in the study of the effects of medicines, forces and foods upon the psychologic activities of cells that we may expect to find the environmental part of the secret of health and disease, and it is in the study of the effects of mental activities upon cells that we may expect to find the subjective secret of health and disease."

We are each composed of millions of cells, and Dr. Gates says that each of these cells has a certain amount of mind. He has discovered that microbes can feel. He took one of the lowest living organisms and laid it on a piece of glass. He then sent a strong ray of light so that it fell upon the organism, and within a few seconds it began to move, showing that it must have felt the light and wanted to get away from it. He has discovered, he says, that all animals in using their minds act to a certain extent upon all other animals. For instance, he found that when he put the ray of light on such an organism it required two seconds before it was affected by it. He again performed the same experiment with several men in the room, all of whom were thinking intently on a certain problem, and found that the mind waves, as they might be called, had so stimulated the little organism that it moved in half a second. Such mental action goes from using waves, according to Dr. Gates, with a velocity of 186,000 miles a second, while the movement of feeling along the nerves of your body toward the brain is only ten feet a second, so that mentally you are nearer the Emperor of China than you are to your big toe.

Dr. Gates has also performed some wonderful experiments in mind building, and is firmly convinced that our brains can be added to and built up. He says:

> "I have tested it in many ways. I have a baby, for instance, who will discriminate more than a hundred thousand different shades of color, and who has been specially trained in seeing, feeling and in other ways. I believe that we have eight senses, you know, instead of five. We see, we hear, we smell, we taste, we touch. We also have a sense of cold and a sense of heat, and also a sense of muscular action. All of these senses are based upon thought. They are controlled by the mind. The use of them acts upon the mind. Every time you use one of them a certain set of cells in the brain is changed, and by their use you can build up a new set of brain cells. Unless all of these senses are used your brain will be unevenly developed, and some parts of it will not be developed at all. In training my child I tried to make him use all of his senses. I taught him the sense of heat and cold by the use of hot and cold baths, graduated from cool to warm. I also used rubber gloves, connected with the water supply, and as a result of this I believe his brain will be stored with memories of all the degrees of heat and cold he is likely to have in life, and I think he will be able to endure the differences of temperature. He is now 2½ years old, and he has never been sick but once, and then he had the measles.
>
> I have boxes of blocks with which I taught him the different geometrical shapes, and whistles with which I taught him sound, so that he can now distinguish between scores of different pitches At ten months he could distinguish fifty different tones and thirty different calls. My experiments in teaching never last more than five minutes at a time, and the child really likes them. A child who had been trained for six weeks after birth in the excessive use of the heat and cold senses was found, after dying of scarlet fever, to have in the temperature areas of the brain more than twenty-four times the average number of cells."

Dr. Bonwill has returned from Moscow, where he received much merited attention, and in other foreign cities as well.

Dr. George Weld gave a very instructive paper to the First District Society in October, showing the easy access to pulp-canals, by diagrams and drawings. This is an age of illustration. Dr. Weld has had no little criticism concerning his treatment of pulp-canals, but in his last paper there is an able answer to his critics.

We have been asked if we did not make a mistake in stating in our last letter that Dr. Tenison had died, but there was no mistake; we have verified the fact.

We have listened to the reading of a paper prepared for the October meeting of the Vermont State Society, entitled "Chronic Alveolitis." No, the title was the old one, "Pyorrhea," but we think the first is the better. We recently met a lady of more than ordinary good sense, yet she had a mouthful of gold crowns, mostly on the anterior teeth, and put there within the last three months. We were tempted to tell her how utterly out of all good taste it was, but we remembered that there was a time when we were guilty of the same practice. Then our ignorance was excusable, but now repentance is in order.

Cordially, NEW YORK.

DENTAL SOCIETY METHODS.

MANATEE, Fla., Oct. 8, 1897.

To the Editor of the Digest,

DEAR DOCTOR:—I have been reading for over thirty years the reports of meetings of dental societies in which nothing is ever given except a list of the officers elected. These questions, therefore, seem reasonable—Was this all that these societies met for? If such elections were not considered the most important things accomplished, why not give the other results of the meetings? If anything was done which made the names of their officers of enough importance to be heralded over the United States each year, why not let us know what it was? Does it not seem plausible, that if they accomplished anything but to elect one another to office they would wish to have credit for such action? What does the profession care who are the officers of societies that never do anything to advance its interests? Instead of its being an honor to be reported in such a way, it looks like unqualified quackery.

Respectfully, W. E. DRISCOLL.

ATTEMPTED SUICIDE OF DR. D. R. JENNINGS.—As we go to press we learn that Dr. D. R. Jennings, a dentist in Cleveland, O., shot himself Oct. 28, and will probably die. It is supposed that overindulgence in cocain unbalanced his mind.

VACCINATION AGAINST THRUSH.—Mr. Roger, in the *Societe de Biologie*, says that an injection of a cubic centimetre of a culture of oidium albicans into the veins of a rabbit engenders a disease which kills the animal in five or six hours. If the injection is given in very small doses the animal becomes immune and can endure a dose double the quantity of the usually fatal dose. The serum of the animal presents qualities analogous to that of animals vaccinated against bacterial maladies. If thrush is injected into normal serum, at the end of twenty-four hours the fluid becomes flocculent and thick, while the serum of the vaccinated animal remains clear.

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Editorial.

THIS MONTH'S ORIGINAL ARTICLES.

In this issue are several papers to which we would call attention. The one by Dr. Fletcher on "Crown Work" is especially worthy of consideration, and the suggestions which he makes are sound and should be carefully studied.

The "Discussion on Cataphoresis," about which subject too much can not be said and thought, and the paper on "Children's Teeth," by Dr. Kerr, especially that part relating to the management of children, will both be found to contain many new and valuable points.

The letter from Dr. Driscoll on "Dental Society Methods," while rather radical in some of its statements, contains some truth, and we presume will call forth both favorable and adverse criticism; while the wonderful discovery by Dr. Gates, briefly described in the New York letter, will, we feel sure, be of interest to all our readers.

DENTAL EDUCATION.

The Faculties' and Examiners' Associations are still a prolific source of contention, and we hope that out of all the discussion and complaint much needed reforms will eventually come.

It does not seem altogether settled whether the Faculties' Association took a backward step at Old Point Comfort or not. According to some the dissension arises from the fact that the action taken is not understood, while others positively assert that the meeting was controlled by a majority of schools which did not want a high standard. Still again we are informed that the Examiners' Association is to be blamed for the action. It is to be hoped that all those interested will come to the front and give their opinions and their side of the question. Our pages are open to a full and free discussion of this most important subject, and the future standing of our profession depends upon a correct solution of what just now seems to us a much unsettled condition of affairs.

THE NATIONAL DENTAL ASSOCIATION, RECENTLY FORMED AT OLD POINT COMFORT.

We are led to a consideration of the merits and demerits of this new organization since reading the attack made upon its plans by two dental journals, editorially—the *International* two months ago, and the *Practitioner and Advertiser* for October also delivers a tirade against the almost unanimous action taken at Old Point.

It so happens that the editors of both these journals were on the committee that attempted to revise the constitution and by-laws of the American Dental Association, and as the editor of the *Practitioner* says, "That committee labored long and earnestly, and finally presented a report which embodied many excellent suggestions;" and farther on he says, "That report was shelved and finally buried."

We have no doubt that the committee worked hard in the endeavor to get up a constitution and set of by-laws, and now feel that they wasted their energies. Well, so they did, but the reason was not that through scheming and other reasons given by these editors the report was not acted upon or adopted. The real trouble lay in the fact that the gentlemen constituting that committee were trying to do something for which they were entirely unqualified, as was proven to all except the committee by the report itself, and the kindest thing to do was to shelve it. Both gentlemen were men of ability, but not along the line of getting up constitutions and by-laws for the government of societies.

Generally those who grumble and find fault with the laws governing societies are the ones who know the least about what such rules should be. The constitution and by-laws of the American Dental Association were about as correct and suitable for the government of that body as they could be. They were revised and corrected from time to time as the necessity of the case required, and the committee that got up the report which was adopted for the National Association was wise in following closely the constitution, by-laws and resolutions of the American Association. The American was not a failure by any manner of means, having accomplished a great work for the profession, and while it was not so great a success as might have been desired, the fault did not lie in the plan of organization.

One thing which has always seemed a detriment to us was the time of holding these meetings, and we are not sure that the new organization is altogether right in selecting only a month later as a meeting time. However, this can probably be adjusted for the best and to the satisfaction of all in the course of time.

It is not our intention, however, to discuss the favorable and unfavorable features of the new organization at this time. We merely wish to insist that it was wise to follow and adopt such plans of government as time and experience had proven to be a success. When would-be organizers ignore the existing forms of constitutions and by-laws, they are treading on dangerous ground.

Notices.

PROGRAM OF THE ROCHESTER DENTAL SOCIETY.

1897.—October 19—Dr. W. W. Belcher, essayist; subject, "The Laboratory." November 16—Dr. F. J. Woodworth, essayist; subject, "Advice to Patients." December 21—Dr. C. H. Nicholson, essayist; subject, "Temperament as Indicated by the Teeth." 1898.—January 18—Dr. W. H. Barr, essayist; subject, "New Remedies and Methods." February 15—Dr. R. H. Hofheinz, essayist; subject, "Cements and Gutta-Percha." March 15—Dr. J. E. Line, essayist; subject, "Pathological Changes in the Dental Pulp." April 19—Dr. J. W. Cowan, essayist; subject, "Gold and Alloys." May 17—Dr. F. A. Greene, essayist; subject, "Fracture of the Superior and Inferior Maxilla." June 18—Dr. C. F. Howell, essayist; subject, "The Year's Advancement in Dentistry."

The place of meeting is to be held in alphabetical order of members. Two members at each meeting are to head the discussion on the paper of the evening A member at each meeting is to head the discussion under "Incidents of Office Practice." A question box is to be started, open to all desiring information. The essayist is required to send his paper to the members discussing it at least one week in advance of meeting. The executive committee expect to complete arrangements for two interesting special meetings during this winter's session.

MEMBERS.

Dr. W. H. Barr,
Dr. J. H. Beebee.
Dr. W. W. Belcher,
Dr. J. W. Cowan,
Dr. I. C. Edington,
Dr. R. Erler,
Dr. F. French,
Dr. J. S. Furner,
Dr. L. H. Gilbert,
Dr. F. A. Greene,
Dr. B. S. Hert.
Dr. R. F. Hofheinz,
Dr. H. N. Holmes,
Dr. C. T. Howard,
Dr. C. F. Howell,
Dr. F. H. Lee,
Dr. J. E. Line,
Dr. H. S. Miller,
Dr. C. H. Nicholson,
Dr. J. Requa,
Dr. L. Requa,
Dr. F. M. Rood,
Dr. B. G. Saunders,
Dr. F. L. Sibley,
Dr. P. H. Smith,
Dr. W. W. Smith,
Dr. D. H. Waugh,
Dr. W. A. White,
Dr. W. A. Windell,
Dr. F. J. Woodworth.

These papers will be published in the DIGEST as soon as read.

RECENT PATENTS RELATING TO DENTISTRY.

590,214. Dental furnace, William Dall, Glasgow, Scotland, assignor to Dental Manufacturing Company, Ltd., London, England.

590,460. Dental appliance, Charles F. C. Mehlig, New York, N. Y.

590,442. Device for forming seamless tooth crowns, Lansing S. Skiff, Salem, Ore., assignor to J. F. Twist, San Francisco, Cal.

590,246. Dental engine, Gustaf Vally, Johnstown, Pa.

590,799. Manufacture of metallic tooth crowns, Louis L. White assignor to L. L. White Tooth Crown Company, San Francisco, Cal.

27,690. Design, tooth brush holder, Alfred A Waite, Wilmington, Del.

591,338. Dental chin-rest, Frank F. Fortney and T. H. Stevens, Ravenna, Ohio, said Fortney assignor to said Stevens.

591,352. Apparatus for disinfecting and deodorizing purposes, Alexander G. Hunter, Toronto Junction, Canada.

591,499. Dental mallet, Percy Russell, assignor of one-half to I. S. Russell, New Market, Md.

TRADE MARKS.

30,565. Artificial gum used in dentistry, India Rubber Comb Company, New York, N. Y.

30,672. Tooth washes, Opal Cream Company, Bloomington, Ill.

(List furnished by John A. Saul, Patent Attorney, Washington, D. C.)

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(Continued from page 604)

SATURDAY, JULY 31, 1897—MORNING SESSION.

Vice-President Noble called the meeting to order, and the secretary called the roll of states and read the minutes of the last previous meeting.

The secretary reported that he had just received the credentials of Dr. J. A. Libbey, of Pennsylvania.

Dr. Klump: Before the minutes are adopted would it not be well to have those amendments in full?

Dr. Donnally: I left yesterday before the work was fully completed and do I understand that the modification of the rule was made complete and passed upon by this association yesterday afternoon—finally passed upon?

The Chairman: They are subject to amendment at any time.

Dr. Meeker: They were not adopted as a whole as they were not finished.

Dr Brown: I believe the secretary has received a communication from the state society of Pennsylvania which it might be well to have read now.

The secretary then read a communication from the Pennsylvania State Dental Society.

Dr. Meeker: I did not read this before because it came from a dental society, and I did not think it had anything to do with our association, but as Dr. Brown called for it I read it.

Dr. Donnally: How can the dental society of Pennsylvania instruct its board of examiners? They are instructed to take cognizance of certain things and to regard certain things done by the society. We have never tried to force a board to act contrary in any respect to the laws of its own state. Such things as that grow out of a misapprehension of the purpose and policy of this organization.

Dr. Brown: I called for the reading of that paper because it seemed to show the intent in certain quarters to place this organization in a wrong light, and it is right in line with certain editorials we are all familiar with. I think the time for stamping out this kind of business has come. The idea of a state society instructing its board of examiners, a state commission, as to an action which they are certainly capable of taking care of! I think it is a—well, you may say that it is an impertinence to that state board, and a board which is a component part of this organization, and therefore it reflects on us. I do not think it is a proper act of a state society to interfere with a state board which is part of the national organization.

The Chairman: I have heard the statements so far. If any action is proposed you can speak upon it. Is there any action proposed?

Dr. Klump: I was going to say, in explanation of this, that the intention of it was to state that as the law stands and as the rules were, the State of Pennsylvania could not be represented in this national board of dental examiners unless those rules were modified, and I think the whole intention of that resolution was simply to call attention to that fact, and to state that we would have to withdraw unless the rules were modified to a certain extent. The state board of Pennsylvania is not yet appointed under the new law and we do not know who they will be, but there are twelve men recommended by the state society, six of whom are to be appointed by the governor.

Dr. Donnally: I would like to ask Dr. Klump before he sits down if there is anything peculiar in the laws of Pennsylvania which gives a state society a right to instruct its board of examiners, and if the board is under the direction of a state society in its general course and policy, or under the influence of this organization. This organization not pretending in any way to dictate its course and the administration of the law, but the general policy being to bring about harmony in methods, and in carrying out the general purposes of this organization, which it is not necessary to repeat here.

Dr. Klump: I think it is the general impression and idea of the state society of Pennsylvania that they would like to be represented in this board, and that they thought a great deal of good could be done by having their representative here, but as the law reads specifically, and in some instances was different from the rules and regulations, they could not retain their membership unless those rules were modified. So far as the state board has been concerned heretofore I think the state society has had no control over them; neither has the action of the dental examiners had any great influence. The law is very specific as to what examination they are to make. As I understand the law—of course we are not any of us very familiar with it, as it has just recently been passed—the board itself under the new law is specifically instructed as to what persons are eligible for examination before that board and what are not, and it cannot be delegated to any other society or to any other body of men, excepting the state board themselves. I think it has been the desire of the state society and the state board to retain membership here, and the principal desire was to have the rule so modified that they could retain membership.

Dr. Green: Dr. Klump has very clearly stated the position of the Pennsylvania State Dental Examining Board as connected with the state dental society. All that the society does, or has hitherto done, is to name and elect the members of the board. After that the society claims nothing whatever to do with the board as to its action. That is governed and controlled entirely by state laws, three of which we have had in the state. There has been a very great desire in our board to have a representative in this association, and it has been represented here for a great many years. They still, as Dr. Klump has said, feel the same way and greatly desire it, and I felt after the modification of these rules had taken place yesterday, and the changes were about to be made, that I would hardly feel justified in handing in the resolution; but as it came from the secretary of the state society it was proper that it should be presented here and read. But it did seem to me that we have now passed beyond the necessity of action in that case. We greatly desire, and I want to impress it strongly upon this body, that the Pennsylvania State Dental Examining Board desire to work in unity, so far as they can, as they have heretofore done with this association.

Dr. Libbey: I believe the president ruled this out of order, as there was no motion on the subject, but as he is allowing discussion, and as the question that was asked has not been entirely answered, I want to say that it was I who presented these resolutions to the state society, and I was surprised when Dr. Meeker read these resolutions as having been sent to him, because they were sent to the delegates who came here and I expected them to present them. I do not feel that it is necessary to make any further explanation or talk any more on this subject, as I understand the disabilities have been removed. But had they stood I should have claimed the right of the Pennsylvania State Society to express its opinion on that matter, and. I should have given my reason very clearly; but I do not see any use of spending any more time on this now. I guess we are in such shape that we can stay with you.

Dr. Donnally: It simply says in the resolution that the Pennsylvania Society has given its board certain instructions, and if there is any authority for the instruction of that board by the state society we do not know of it, and I do not think that the board itself has considered the matter fully when it allows any organization to give it specific instructions in regard to a matter, and especially a matter that could be settled by its own representatives to this body.

Dr Moore: I move we go on with the regular business. We have talked enough about Pennsylvania. I don't know anything about the internal affairs of Pennsylvania, but I do know that in Virginia no society can interfere with or instruct a state board. There are state officers appointed by the state executive power in Pennsylvania and in every other state, and no society has any right to instruct them at all, or interfere with them in any way. They will take advice perhaps, but they will not be instructed.

Dr. Meeker: I move we proceed with the regular order of business, the continuation of the report of the committee on colleges.

The President (in the chair): We will now hear from Dr. Faught.

Dr. Faught then read the latter portion of the report of the committee of colleges, which appears upon the record of the meeting of Friday morning, July 30th.

Dr. Noble: Does it require a motion to adopt that suggestion?

Dr. Faught: The idea is, I believe, to go through the report of the committee on colleges and adopt or reject these suggestions, because they are made from the experience of tests, and we must formulate some way by which we may act in the future. We have issued the list this year without any dates being appended, and in my correspondence I found that questions constantly come up as to when this college or the other was recognized. These questions which I have propounded here have been written to me time and again during the past year, and I have had to act in a conservative way, letting each board, as I told you, act for themselves. These questions will arise again in the future, and it is simply so that your committee on colleges shall be instructed so that it may issue a list by the authority of this association, with the dates appended at which the institution was placed on the list. That will then give the board the desired information and they can act for themselves.

It was moved and seconded that the recommendation of the committee on colleges, that the date of recognition of any institution be placed upon the list issued by this association, and that the question of the eligibility of the candidate for registration or for examination be left for each state board to determine for itself, be adopted. A vote being taken the motion was carried.

Dr. Faught: I believe that covers all of the suggestions contained in the report. The rest of the report consists of the discussion of the question of preliminary education as seen by your committee, so as to bring it to a point. That of course is embodied in the rules now in the hands of the conference committee. I might state right here that a special and specific report of your committee on colleges regarding colleges applying for recognition cannot yet be presented. We have not finished it and we are in a position of not being able to finish until after the final report of the committee on conference with the faculties. After that committee has made its final report and you have adopted the rules as a whole, then your committee on colleges will be in a position to determine the applications which are now pending, and not until then. So that is all we have at the present time.

Dr. Chappell: The committee on conference last night directed that the secretary of the conference committee secure and have copied in duplicate for their use the resolution as adopted by this association; so that they can know what they are to consider, and I have been engaged in preparing the rules as adopted yesterday. Now the question is, Do you wish to have these read before you so as to know exactly what we did yesterday, so that we can then give them to the typewriter for manifold copies? If it is your pleasure to have them read, so that if any corrections are necessary they can be made before the copy goes to the typewriter, I shall be happy to read them.

Dr. Meeker: I think they ought to be read.

The President: If there is no objection they will be read.

Dr. Chappell (reading): Rules of the National Association of Dental Examiners, adopted July 30, 1897. Rule 1. Colleges desiring recognition by the National Association of Dental Examiners shall make application for such recognition through the committee on colleges on blanks provided for that purpose.

Rule 2. The preliminary requirements prescribed by the National Association of Dental Faculties, as adopted at Saratoga in 1896, shall be the standard accepted and required by the National Association of Dental Examiners.

Rule 3. The statements set forth in the application of any college for recognition shall be verified, after investigation, by the board of dental examiners of the state in which the college is located, or by other persons designated by the National Association of Dental Examiners, in case no such state board exists; and the recommendation of such board shall be essential to recognition.

Rule 4. The state boards in connection with this association are hereby required to become informed of the character of the dental colleges located in their respective states, as to their equipment, facilities and methods of teaching, and shall report annually to this association wherein they fail to comply with these requirements.

Rule 5. Attendance of students upon three full courses of not less than six months duration, each in separate years, with three months' practical instruction intervening between the courses, shall be required before final examination for graduation.

Rule 6. Each dental college to be on the list of recognized colleges must have a teaching faculty composed of at least six individuals, and must teach the following branches: Operative Dentistry, Dental Pathology, Dental Prosthetics, and Oral Surgery; also the six branches, Anatomy, Physiology, General Pathology (fundamentals), Materia Medica, Therapeutics, and General Surgery. The students must also be taught the subjects of Chemistry and Bacteriology in laboratories adapted to the purpose and under suitable instructors. Such college must possess, in addition to suitable lecture rooms, a well appointed dental infirmary and a general prosthetic laboratory; must also furnish in this way systematic instruction to its students.

Rule 7. Final action shall not be taken on the application of any college until such college has been admitted to membership in the National Association of Dental Faculties.

Rule 8 These rules and conditions shall apply to all colleges, including those now on the recognized list, as well as those making application for such recognition.

Note A. We consider it inadvisable for a member of an examining board to be connected with a dental college in any capacity whatever.

Note B. We recommend that each college on the list of recognized colleges state in its annual announcement that it complies with the rules and conditions of the National Association of Dental Examiners.

Dr. Moore: I wish to call attention to a clause in one of these rules, and that is in regard to the three months instruction between the college sessions. That will give a great deal of trouble—certainly in our state. The most trouble that we have in enforcing our law is to keep students from practicing during college vacations—you don't know as much about our affairs as the rest of us from Virginia do—and we have had a great deal of trouble for some years in getting any law at all, and in the meantime Virginia became a sort of Botany Bay for men driven out of other states. We have a large number of men who are not competent to practice dentistry, and it has been very hard for us to control them. Dentists will hire these young men to work for them during the college vacation, and in some cases they have fitted up offices and put them to work there during vacation, paying them a salary, or they have put them to work and made what profit they could and that gives us more trouble than all the other violations of the law put together; all the prosecutions that we have had have arisen from that one thing. I have had a number of cases already reported to me this summer of dentists who had young men working for them in their offices. They worked for the patients and the principal collected the money for the work that they did and paid these young men something for their time and services. That rule makes it obligatory upon the colleges to see that these young men are practicing somewhere. In our state we have no law regulating students. I am quite familiar with the New York law and with some others, and the New York law requires the registration of every student. Every student has to be accounted for, so that the board has control of all the students; but we have no control over them whatever. If that rule is permitted to stand as it is, and it is enforced, it will give us much trouble in Virginia. The faculty of the University College in Richmond have a rule that if any student in that college violates any state dental law he will be debarred from returning to college; they will not receive him again.

Dr. Brown: That is a rule of the Faculties' Association.

Dr. Moore: That is the rule of the institution, that they will expel him, and you know the rule of the Faculties is that a man expelled from one college cannot go to another. If I should report to that college that one of their students was violating the law they would at once expel him and report to the other colleges that he had been expelled.

The President: Just one moment; there is no motion before the house. Do you wish to have that rule reconsidered? If so, a motion to reconsider would be in order.

Dr. Moore: Have they already been adopted?

The President: Yes.

Dr. Noble: Is not this a matter for the state itself under its own laws?

Dr. Moore: I did not make any motion, but I will if the house thinks it better. But in regard to what Dr. Noble said, this is a matter for the guidance of the colleges. We require the colleges to see that their men get this education. They cannot get it in Virginia because our state law does not give us the right to exercise supervision over the students, and I think a great many other states are in the same position.

Dr. Noble: That is clearly within the states. There seems to be a misapprehension that this association was going to try and control the state. That is right in your own state and we have nothing to do with it.

Dr. Moore: Yes, but our college will say, "We are bound by this action to see that these young men are getting the education through the summer season." How are they to get it?

Dr. Chappell: We have adopted a suggestion from the committee on colleges that each state shall be governed by its own law, which seems to cover that, and consequently it is taken out. We ought to have a modification of the rule we have just adopted so as to go along with these as rule 9, and that will make the whole matter straight.

Dr. Donnally: I wish to call the attention of the association to rule 1, which requires colleges which desire the recognition of this association to make application on blanks provided for that purpose. Rule 8 says, "These rules and conditions shall apply to all colleges, including those now on the recognized list, as well as those making application for such recognition." That is a little bit inconsistent. If this rule 1 applies to the colleges now on the list, colleges must come in and make application to be put on the list before we have any list; it cuts off every college from a place on the list of colleges when we apply the rules. You must take the two together in order to see the effect: "Colleges desiring recognition by the National Association of Dental Examiners shall make application for such recognition," and rule 8 says that these rules apply to colleges that are now on the list. That is the plain language of the rule and it is a question for you to determine whether that is the intention or purpose of this organization, or whether we shall only revise the list as conditions require. I do not like to insist upon a point which I have called to the attention of the association before, but if the discussion of these things were to go on—Dr. Faught gives us the benefit of all the information he has, then the joint committee go ahead and make such rules by the combined action of the two bodies, and make it much more binding on the Faculties' Association, and we will get a grip on them that we could not possibly have by this committee giving these rules to us as a kind of instruction or guide. If we are free and untrammeled, as this committee from the Association of Faculties is free and untrammeled, and the two committees acting together jointly make rules, we shall have the Faculties bound by that to a greater extent than if it comes from this organization as a proposition and is merely accepted by them. The moral force and influence of the joint action of the two bodies acting together would be much more binding, and would demand respect of a great number in the profession. Teachers and even editors would be inclined to have some respect for it and the whole thing would have the force and effect of a declaration of what is right as to that organization and this by all concerned. I think, gentlemen, you ought to consider that point. The Faculties would not for a moment take up this matter and pass any regulation or rule while this subject is in the hands of a committee, and I do not think that we ought to do it. So far as the committee on colleges is concerned we might instruct that committee to take these rules and finish their report under them, but simply for their action for the present; let them take these rules and hold them as their guide to finish up their work of the year and leave the balance of the matter in the hands of a joint committee, for you are in effect instructing the conferees on one side, while it is a parliamentary rule that the conferees on neither side should be instructed. For instance, compare it to the House or the Senate: if the Senate instructed its committee it would be ruled out of order; it was done in the tariff bill a few weeks ago. No instructions should be given, the proprieties of the matter as well as policy suggest that it ought not to be done.

The President: Do I understand that you wish to hold this and not adopt it as a rule for the time being?

Dr. Donnally: My suggestion is that it should not take the form or nature of instructions to the committee. It should not be offered to the committee as ground for contention with the committee of the faculties It should not have any status that would have any bearing on the action of this committee, further than such discussion as gives to the committee information of the general trend of feeling and the general views of this organization. But it might with propriety be given to the committee on colleges as a rule for finishing up the work of the year.

Dr. Chappell: By your unanimous consent we will have the manuscript changed a little so that it will read, "Colleges desiring recognition by the National Association of Dental Examiners, which are not now on the recognized list, shall make application for such recognition through the committee on colleges on blanks provided for that purpose." We have added just the words, "which are not now on the recognized list."

Dr. Brown: If I understand Dr. Donnally, he wants, in other words, all the work of yesterday afternoon thrown out.

Dr. Donnally: No, indeed.

Dr. Brown: Then you want the committee on colleges to make a report on a set of rules that do not exist?

Dr. Donnally: No, you wholly misunderstand me. I thought I made that plain to you in private conversation. The idea is that we can give the committee on colleges these rules as their guide in finishing their work, but in no sense are they to be in the nature of instructions to the joint committee now in session.

Dr. Brown: What is the use of adopting two or three sets of rules in one session? How are we going to make a report and admit a whole lot of colleges under a set of rules that we propose to change a few minutes afterwards? We cannot consent to that.

Dr. Donnally: I understood that the committee on colleges said that it would be necessary to have some instructions or some modification in regard to the rules in order that they might finish up the work. That is what I understood.

Dr. Brown: I think it very desirable that members of this association who propose to discuss questions should remain in the room all of the time. If Dr. Donnally had been here during the discussion yesterday afternoon he would have understood this matter. We cannot make a report under the old rules with rule 8 remaining. That was decided yesterday. We have no new rules to work under because they have not been adopted as a whole, and Dr. Donnally does not want them adopted as a whole, neither do we until this conference committee reports. Now what are we going to report upon? I do not think that we are taking an arrogant position in codifying these rules and getting them in shape so that our committee can use them to show the spirit of this association in meeting the faculties, showing that we want to come to their ideas in this matter and smooth things over. I do not think that that shows arrogance in our board. Neither do I think that we should have these committees formulate a set of rules that are going to bind us. I do not think the faculties committee should take part in making our rules. I think it would be a great deal more dignified to have them accept our rules, or perhaps suggest changes in them so that we could meet them on the point; but I do not see anything objectionable in going to them with this new set of rules.

Dr. Noble: That is something to go by.

Dr. Barlow: I cannot see what weight the argument of Dr. Donnally has. The committee of conference has had its instructions from this board and I do not see why it should not follow them and make its report.

Dr. Lowry: It occurs to me that perhaps the gentleman on my left (Dr. Donnally) has the idea that this conference committee can get more than even these rules provide for—get more concessions. He suggested that yesterday, and he does not want to be restricted to these rules if he can get a more liberal concession from the Association of Faculties than these rules ask for. He feels that he ought to be at liberty to do that.

Dr. Brown: He is.

Dr. Lowry: If these rules are taken before the Association of Faculties they will know how liberal the Association of Examiners is and possibly it would be more difficult to get concessions from them, even as much of a concession as the board indicated yesterday. Let us ask for a little more than we want and we will probably get what we want, and that is his idea, is it not? Is not that your idea?

Dr. Donnally: I want them to make the concessions, to appeal for them in argument as to what is right, and get their own consent to it.

Dr. Lowry: You don't want to submit these rules to a committee?

Dr. Donnally: The question was asked last night if this conference committee is to make rules, and we were told to go ahead and make rules. What is the use of this committee going ahead to get something of that kind under the authority of both organizations when one side is doing it by its own authority?

Dr. Lowry: I agree with you somewhat on that point, because if we submit these rules to that committee it will be somewhat in the form of a demand, if we have made these rules prior to any conference whatever. This set of rules ought to simply be a guide to our committee and a line to which to work, and I do not think it would be a very wise idea to open out all our business to the other committee and show them just what we have done, and give them the impression that we demand that.

Dr. Donnally: Do you mean open up the rules, or the subjects of the rules? We would open up the subject of the rules, but not these rules.

Dr. Lowry: I say I don't think it would be wise to open these rules to their committee as a whole and show them what action we have taken and get them to come to it. I don't think we could get as good terms with them that way as by going about it the other way. The question now is how we can best effect a compromise with the Association of Faculties.

Dr. Moore: I am perfectly satisfied to leave it in the hands of the conference committee. I am willing to trust to Dr. Donnally and that committee. When they come together, if there is some little direction required let them come back and state it. That is all there is to it.

Dr. Clements: I would like to ask you if we have got any rules now as an organization?

Dr. Meeker: We have.

Dr. Clements: They have not been adopted; they have been revised and as an organization it seems to me we must have some basis to work on.

Dr. Meeker: They have been adopted.

Dr. Donnally: I propose to make a motion, but I want to state before I do so, that it has been shown all around that we are without a perfect organization, and I have been anxious to see some gentleman—I hoped Dr. Faught would do that—make a motion that these rules should define the different committees and their duties I have abstained from making the motion because I did not want to be on the committee, having too many things to do, and because I am not in a position to work. I thought perhaps if an efficient and energetic committee could get together they could perfect our organization so that the continued question of what the rule is on this, or what the duty of that committee is, could be answered. I hope that may be done. I am going to make a motion, if you will allow me, that the committee on colleges be requested to go ahead and make their report, as they are abundantly competent to do according to their ideas of what is right and proper, under such modification of these rules as they deem necessary.

Dr. Noble: That's exactly the point—we are going to have you go over in conference and see what modifications we desire. We have given you the guide, now do you go and do the work and that will end it.

Dr. Donnally: We have gotten a good deal of information and obtained the feeling of the meeting, and we understand what this organization will be satisfied with and it is very important information for the committee. I think everyone has been benefited by it and will be better able to perform his duties, but the motion is that the committee on colleges make this report without regard to the rules passed last year, or under such modification of those rules as it may deem necessary and proper; let them go ahead and finish their report.

Dr. Chappell: I don't understand that the motion was seconded. We used to have what we called a constitution and by-laws in this association.

Dr. Meeker: We have it yet.

Dr. Chappell: That means the organization with us—when we subscribed our money, etc., and incorporated it under the statute and adopted our constitution and by-laws—then we were organized and that has already been done, and we have now nothing to do except to go ahead with the work.

Dr. Donnally: Then what are the duties of the committee on colleges? Dr. Faught has been worrying over them for a year.

Dr. Faught: Oh no, you misunderstand me entirely.

Dr. Donnally: You say in the paper you and Dr. Brown issued that you have not been able to find any rules limiting or defining the duties and powers of the committee on colleges.

Dr. Faught: Oh no We had them defined last year.

Dr. Moore: We are wasting a great deal of precious time; as I understand it, the contention is that we have not any rules, that there are no rules in regard to colleges We spent a whole session yesterday afternoon, went over that matter carefully and discussed it, and adopted our rules; they were adopted here yesterday afternoon and they are now the rules.

Dr. Edwards: Not adopted as a whole.

Dr. King: Then I move that we adopt them as a whole.

The above motion was seconded by several members.

Dr. Moore: We have got our constitution and a whole lot of rules that have been adopted from time to time. There is no necessity for any discussion about that. I thought yesterday we adopted these rules and they were to be the rules for the guidance of the committee to go to the Faculties' Association. I don't think we shall have any trouble at all. I think the Faculties' Association will take these rules. I had a talk with some of the men—the good men—when I say the good men I do not mean that they are not all good—but I mean men who have been working for higher education for years in the Faculties—and I told them what we had done yesterday and they seemed to be perfectly satisfied and thought we could work together without any difficulty.

The President: The motion now is, that the rules we discussed yesterday be adopted as a whole.

Dr. King: In support of my motion I wish to say this: The rules that we adopted singly are the rules governing this association; they are the rules that our committee is to go by. They are not rules to be submitted to the committee of the Association of Dental Faculties. They are merely the rules that our committee is to go by. If after consultation with the other committee it is agreed that they shall be further amended this association can so amend them.

Dr. Brown: I doubt very much whether we can so amend these rules, if they are once adopted as a whole.

Dr. Chappell: The rules must be submitted at one session and adopted at another.

The President: I do not want to cut off any debate that will throw any light on the subject, but there is a motion before the house.

Dr. Hatfield: From some of this discussion it might be supposed that this association was not competent to make rules governing this body. If we are to go to the other association and ask them what rules are agreeable to them, we are not making rules to govern this body, it seems to me. They will ask what our rules are; what are we going to tell them? I think we are competent to make rules to govern this body and I think we should adopt some rules so that when we go there and they ask what the rules are we can have something to submit to them.

Dr. Donnally: But these rules are to govern that body. The rules that this joint committee proposes to make are rules that will control them.

Dr. Faught: If I might have the privilege of saying a word, not to argue the question but to throw a little light on the subject from the standpoint of the committee on colleges, I think that we are perfectly competent to adopt these rules. I think the gentleman who just spoke is perfectly right, if it is definitely and distinctly understood now before we do it, that whatever recommendations are brought back from the Association of Faculties we can amend the rules and readopt them as a whole before you ask your committee on colleges to report.

Dr. Noble: That is all right.

Dr. Moore: I do not see what that has to do with the report of the committee on colleges. Let the committee on colleges report what it has done and what is to be done in the future. I don't see that that has anything to do with this matter at all. I do not see why we cannot get that committee's report and act upon it. It has nothing to do with the future, but only with what is past.

Dr. Barrett: I should like to ask if there is any by-law governing this association as to the number of times a man should speak on any question.

The President: No sir.

Dr. Barrett: I think that is a rule that we are most in need of.

Dr. Donnally: I have risen to make an amendment to that. I move that the motion of Dr. King, of Baltimore, be changed so as to read that the committee on colleges take the rules as adopted yesterday seriatim, and the one additional adopted this morning, if you please, and finish their report of the year's work under those rules. Let them not consider future conditions. My amendment is that the committee on colleges take these rules for their guidance and conclude their report under the rules as modified.

Dr. King: I don't see how that can be made as an amendment to my motion.

Dr. Fredericks: I move the previous question.

The motion of Dr. Fredericks was seconded and carried. A vote was then taken on the motion to adopt the rules as a whole and the same was carried.

Dr. Moore: I move that the committee on colleges finish reading their report and let us get through with it.

Dr. Faught: The committee on colleges have reported everything they can report at this date.

Dr. Keefe: Have the conference committee anything to report?

Dr. Donnally: The committee on conference have simply to report satisfactory progress and ask for further time.

The President: I desire to make one suggestion, and that is I think the committee of the faculties are the individuals who should make the first advances.

At this point Dr. Barlow, of New Jersey, offered a resolution that the association hold its annual meeting at Washington, D. C., in May, 1898, and thereafter the annual sessions should be held at that place. The motion was seconded; and after considerable discussion a motion was made and adopted to lay the same upon the table.

On motion a recess was taken until 3 o'clock p. m.

AFTERNOON SESSION, JULY 31.

The President called the meeting to order and the secretary called the roll of states.

On motion the reading of the minutes of the previous session was dispensed with.

Dr. Fredericks: I offer the following resolution:

Be it resolved, That in all discussions a member shall have the privilege of addressing the meeting but once, and for not more than five minutes, and a second time when all have spoken who desire to, unless permission is given by the association.

The above resolution was seconded and carried.

Dr. Edwards: If there is nothing before the house and no business pending I should like to say that there is a college in my territory the certificate of which we have refused to recognize. I understand that college has been accepted in the Association of Dental Faculties and I understand there is an application in for membership here.

The President: It should be referred to the committee on colleges.

Dr. Edwards: Then there is another college that I believe is not making any application that I want to speak of for the information of those who know nothing about it. It has so nearly adopted the name of another college that is reputable in its own state and city that the secretary of our association has been deceived and has actually registered a student from it. I at once set a trap for them and got a young man to write as a student who wanted to graduate, representing he had studied two full courses in one college and wanted to get to practicing as soon as possible and asking when they could graduate him. They dropped right into it and offered to graduate him in sixty days. He did not reply and some time after they again wrote him offering to graduate him at the end of thirty days, but saying he must come right away. It is a western college, there being two colleges located in the same state and city, and the names are so nearly similar that it is apt to deceive anyone. After we had inadvertently registered one they just poured in.

Dr. Brown: That is in our report.

Dr. Donnally: Two years ago at this place that question came up, the application was denied and the reasons set forth in a resolution that was adopted unanimously and special attention was called to the fact that the two names were very nearly similar

Dr. Chappell: We have had two diplomas presented to us by the Kansas City College of Dental Surgery, of Kansas City, Kan. There is a Kansas City Dental College at Kansas City, Mo., also.

Dr. Lowry: There is no danger of their ever applying for recognition in the Association of Faculties; they know they would not have a ghost of a show—the one in Kansas; but those two colleges are very easily confounded. There is the Kansas City Dental College and the Kansas City College of Dentistry and the Kansas Dental College, leaving the word "City" off entirely.

Dr. Green: Dr. Patterson sent out a circular cautioning us and pointing out the difference between the two, and I think that went to all.

Dr. Chappell: I think all of the old secretaries understand it, the new ones may not.

Dr. Hatfield: I do not anticipate there will ever be a request from the Kansas City Dental College, of Kansas, for recognition. They have tried to have their diplomas registered in Kansas. We had one little fight with them this spring, but they gave it up, and the attorney-general of our state gave us his opinion that they were not eligible to be registered in our state. We are right on the border and they come over there, and this spring they tried to play a game on the board, but failed and since they have ceased to make any effort. That college is presided over by a gentleman by the name of Atkinson.

The President: Has that any connection with the one over the border?

Dr. Hatfield: I am unable to tell you that, but I think not. A man, I think by the name of Meakin, telephoned to me last winter asking if he was registered as a student and I told him he was not; he asked me if the attorney-general advised us to do so would we do it, and I told him we would take the matter under advisement, and in speaking with the attorney-general he told us we need have no fear; that he would sustain the board. Dr. Atkinson I believe had a charter a good many years ago and it became defunct and about two years ago it was revived again. We had some men from that school registered just prior to that law going into effect; of course we could not do anything with those men.

The President: The committee on colleges have this matter on hand; they understand the ins and outs of those colleges.

Dr. Donnally: If you will allow me I will read from the proceedings of this association, which I referred to a while ago, to show the necessity of state boards having the minutes of this organization for reference:

"It was resolved, that in the sense of this body the Kansas City College of Dental Surgery is not only unworthy of recognition, but we have conclusive evidence that it is a fraudulent concern, and further we would warn the public to be on their guard because of the similarity of title with a reputable school of the same city."

That is in the proceedings of this body in 1894.

Dr. Lowry: There will be but very little further trouble concerning the college presided over by Dr. Atkinson; we have sufficient evidence, we think, to cover that and deal with it fully.

Dr. Donnally: As there is nothing before this body just now I would like to call the attention of the organization to the fact that last year we recommended that a resolution regulating the incorporation of colleges be provided for in some way. In the District of Columbia we had two or three instances, one a very disreputable affair that would sell a diploma for a song; and notwithstanding a great deal has been said about the vested rights of an institution chartered indirectly under an act of congress, we went before congress and had that charter repealed, and there was a part of the bill that provided for the incorporation of medical and dental colleges in the District of Columbia, providing that they must make a satisfactory showing as to equipment and facilities as well as the personal fitness of the faculties to teach. That is in the hands of commissioners, who give an open hearing of all these cases so that anybody may make objections. We stand ready to make objection where there is any good ground for it; there is no objection to a good college. It seems to me something could be done in the different states in that way by fixing the standard and character of the college before it goes into existence. You cannot start a college in the City of Washington, if you have a million of money, until the commissioners have made a thorough investigation and are perfectly satisfied in the premises.

Dr. Moore: The committee on credentials reports that Dr. J. V. Heller, secretary of the Virginia board, is present and his credentials have been approved; also the credentials of Dr. Wright, from the South Carolina board.

Dr. Dowsley: I would like to say something concerning what we have been doing in New England. Possibly you may be all aware that the New England state boards have formed an association. I conceived that idea several months ago and we met in Boston last January. All of the states were represented excepting New Hampshire, and it was only through a mistake that they were not present. We spent a very pleasant evening together and discussed the different methods and ways in which we conducted our examinations. My idea was to see if we could not all get to a certain standard of examinations whereby the certificate from one board might be received by the others as evidence of qualification. Since that meeting one of the boards—Rhode Island—has had an amendment passed to the law and has come up to the standard we suggested. We in Massachusetts think we have a pretty good standard and Rhode Island is right in line and Connecticut we expect to follow very shortly, and the others will be heard from, I hope. I speak of this because I think perhaps it would be a good idea if that was carried out throughout the country, so that the middle states and the southern states should combine into an association, not with any idea, however, of withdrawing from this association, but of working amongst themselves. Our experience has been that men moving from one state to another circulate around New England more than they do in the south or west, and if a man who passes the Massachusetts board presents his certificate to the Connecticut or Rhode Island board it will be prima facia evidence of his qualification and his examination need not necessarily be a severe one. The great trouble now is that no matter how many boards a young man passes, if he goes into another state he must go through the same ordeal. Of course in order to do that every board must come up to a certain standard and that standard should be a high one.

Dr. Hatfield: This is a national association and it seems to me something that would benefit the body is this: Washington, D. C., Pennsylvania and perhaps two other boards retain their delegates to the national association every year; they thereby become more familiar with the proceedings, do more official work and are of greater use to their constituents. It seems to me it would be the part of wisdom if we suggest to the members of the different state boards that so far as they can they return their delegates each year; it will enable them to become familiar with the methods and do more efficient work, for we do not know what has been done from one year to another. I merely make this suggestion so that it may be open for discussion.

Dr. Meeker: According to our constitution our brother, next year, whether elected a delegate or not, could come here and have the same number of votes as he has this year. We passed a resolution that a man who was once a member of the state board should have a seat thenceforth in this body and a voice in its discussions. If a man has gone out of his state board he can be with us just as Dr. Eaton of New Jersey is here now. So far he has not had anything to say, but he could if he wished to. As I understand our constitution and by-laws, if a man from a state board is elected a delegate and thereafter someone is elected in his place, but he continues a member of the state board, he can come here and have the privilege of voting because he is still a member of that state board which first sent him. But I realized myself two years ago that new men coming here are all at sea; they cannot tell what has previously been done, and so a few of us on our own responsibility asked the stenographer to come here. If we have in our printed proceedings a verbatim report of all that occurred, a man from any state can see what was done and is in a position to vote intelligently on any subject because he has read over the whole proceedings. I am glad that point was brought up.

Dr. Moore: The plan we have adopted in the Virginia State Board is this: At the annual meeting the secretary is instructed to furnish credentials to every member of the board who can and will attend the meeting of the national association.

Dr. Meeker: I do not believe it is the purpose of our constitution to bar out any member of a state board whether he is elected a delegate or not.

Dr. Moore: No; but to cover that we instructed the secretary to give credentials to every member of the board who could attend the meeting.

Dr. Donnally: I desire to correct Dr. Meeker. We have no such resolution on the book as he referred to, but as a matter of fact four years ago, seeing the necessity of continuing membership I offered the following resolution: "Resolved, that all persons who have once been delegates to this association may be associate members without the right to vote or hold office." That is about the language of it. I don't think it is printed as it was offered. As a matter of fact a number of the men who are members of the Association of Faculties to day are entitled to come and sit with us and advise with us, but not being delegates to the board they are not entitled to hold office or vote.

Dr. Parmele: Does not that apply and was it not intended to apply to those who retire from the state board? That is the understanding of the Connecticut board—that the whole board is entitled to appear here in full.

Dr. Brown: I understand that resolution was intended to cover those who were retiring from a state board.

Dr. Edwards: Yes, I remember that; it referred entirely to those who were no longer members of state boards and not to those who still remained such members.

Dr. Chappell: This is not a delegate convention, it is a National Association of the State Board of Examiners. The resolution that Drs. Donnally and Brown refer to was adopted to cover those whose membership had expired in their own state board, so that they could retain their membership here and give us their counsel as honorary members.

Dr. Chappell: A gentleman spoke a few minutes ago concerning the state association of New England. In our state we have some cities where the dividing line between the states is in the middle of the main street; sometimes the office is on one side and sometimes on the other. According to the rule of comity between states our attorney-general has suggested that we use every means possible to recognize registration providing no objection is made. I think that when we have our laws amended we should incorporate the matters we are discussing so that if we should get arbitrary men on the board they would be controlled by the law. We all know that there is a written law and an unwritten law, like the common law of England and of some of our states; there is the written law of ethics and the unwritten law of ethics, so that we should be guided by what is right and what there is no objection raised to. We ought to have some uniformity in our laws and when they are amended try to get them within the lines of the spirit and advice of this national board. As to state boards deciding what colleges are reputable, when you make a record of your meetings it is wise to state there the reasons for which a college is rejected, so that if you should ever get into court about it you are in a position to explain the whole matter. Don't put too much on the record; it is better to say too little than to say too much.

Dr. Hatfield: I hope that this body will bear me out, because I want my constituents to understand my request and the meaning of it as to a member ber of the state board being a member of this body. My idea is that the oldest member should be sent as a delegate for the reason that in the appointing of a new board he might be left out. Dr Callahan has been secretary of our state board ever since the board was formed and we retain him in office because he is familiar with all of the work. It would have its weight if this board should make a suggestion in the line I have spoken of, and some member might be retained on the board for that specific purpose so that one familiar with the work might be sent here. I tried to post myself and read everything I could get to read about it and went to see Dr. Davis, who had left our state, but I could not get very much information. Perhaps as we have a stenographer this year we shall be better informed.

Dr. T. B. Whitbey: I move that a committee of three be appointed to codify our constitution, by-laws, rules and regulations, have the same printed and report next year.

The above motion was seconded and carried and the chair appointed as such committee Drs Meeker, Adams and Brown.

Dr. Meeker: I would prefer that the mover of the motion be made the chairman.

Dr. Whitbey: Oh, no: I quite understand the matter and take no exception. Dr. Meeker has been and is so familiar with this subject.

On motion a recess was taken until 8:30 p. m.

EVENING SESSION, JULY 31.

The President called the meeting to order and the secretary called the roll of states. On motion the reading of the minutes was dispensed with.

Dr. Meeker: Last year we had a very complete report from the state board of dental examiners. This year we have a very meager set of reports, which I now hold in my hand. I move that a committee of two be appointed to tabulate the reports and bring that tabulation into the association before the close of the meeting.

The above motion was seconded and carried and the chair appointed as such committee Drs. Dowsley and Parmele

Dr. McCurdy: I would like to ask the secretary if there is a report there from the Maryland State Board.

Dr. Meeker: No, sir, there is not.

Dr. McCurdy: I am sure the secretary was ordered to make a report.

Dr. Meeker: When the adjournment was made this afternoon I understood that the conference committees of both associations were to meet and I supposed they would be ready to make some report at this time. The Faculties' Association held a session this afternoon and their members on the conference committee were engaged there, so the committees did not meet. At the meeting of the Faculties the subject of preliminary education came up and by a vote of seventeen to seven the Faculties decided to go back to the standard of 1884. The conference committee is in session now and may report perhaps in an hour.

Dr. Fredericks: I think that before we proceed to discuss this matter we should get their report, and I move we adjourn until Monday morning at 10 o'clock a. m.

The above motion was seconded and carried.

Adjourned until Monday, the 2d of August, 1897, at 10 o'clock a. m.

(*To be continued.*)

News Summary.

HEALTH OF CHICAGO.—For the week ending June 27, the *Evening Post* states, the mortality rate in Chicago was 10.99, said to be the lowest ever reported for any large city.

DIAMOND DRILLS, HOW TO USE.—In using a diamond drill for making cavities in artificial teeth, it is most important to bear in mind that the point should be dipped in sweet oil or water, *and placed on the work before the engine is started.* The engine should be stopped as often as the drill shows signs of becoming dry, and each time after it has been dipped in the lubricant it must again be placed on the work before the engine is started. It is, perhaps, needless to add that the handpiece must be held firmly and steadily in position to insure success and to avoid breaking the drill.—*Ash's Circular.*

WAS PAUL REVERE A DENTIST?—It has fallen to the lot of the New York *Tribune* to unearth the fact that the American hero, Paul Revere, was a dentist (*Western Drug Record*). If the evidence submitted be not a "fake" palmed off on that usually veracious journal, it establishes a fact not generally known.

Whereas, Many persons are so unfortunate as to lose their Fore-Teeth by Accident, and otherways, to their great Detriment, not only in Looks, but Speaking, both in Public and Private:—This is to inform all such, that they may have them re-placed with artificial Ones, that looks as well as the Natural, & answers the End of Speaking to all Intents, by PAUL REVERE, Goldsmith, near the Head of Dr. Clarke's Wharf, Boston.

This quaint advertisement, which appeared in the Boston *Gazette* of December 19, 1768, serves to show that Mr. Revere was a man various and versatile. It appears that his business was not solely to be a Revolutionary hero, to take exciting midnight rides and warn the Lexington minute-men, but that in his odd moments he carried on the more lucrative trades of goldsmith and dentist. His occupation as a handicraftsman in precious metals has long been known, but the landlord who said, "Listen, my children, and you shall hear," did not give the wide-eyed young people the interesting details in regard to Paul's dental work. In fact, his skill in this regard might never have been known had he not conceived the rare value of advertising.

FORMOL IN DENTAL SURGERY.—Didsbury announces in the *Journ. de Med. de Paris* of July 18, that it has been his experience that formol applied at once to the cavity, when the pulp of a tooth is removed, and hermetically enclosed, renders the extraction of the nerve unnecessary. Ten cases in twelve proved absolutely successful. The pain is severe for four or five minutes but then passes away. He also finds formol efficient in deodorizing carious cavities.

BALDNESS MICROBE.—One of the physicians at a hospital in Paris, it is stated, discovered a microbe of the skin which accounts for baldness. It appears that baldness attacks those whose skin exudes an excessive amount of fat or oil, and when the parts affected are washed with ether and other solutions, myriads of small microbes may be seen similar in length (!) to the tuberculosis bacillus. This particular skin microbe varies in size according to its age and position. For instance, on the scalp it is smaller than on the face or the body, but the structure remains always the same. The doctor has inoculated a sheep and a rabbit with the skin microbe at the Pasteur Institute, and he will make known the results of his experience to the Society of Dermatology. It is stated there are three or four therapeutic agents capable of destroying the fatty substance of the skin complained of.—*Am. Micros. Jour.*

Obituary.

DR. E. MAGITOT.

The Odontological Society of Chicago, recognizing the great services rendered by Magitot to the advancement of dental science, has adopted, and ordered sent to the family of the decedent, and to the dental journals of the United States and France, the following:

Magitot was born in Paris in 1833 and died there during the current year. His first contribution to dental literature was made in 1857 at the age of 24, relating to the structure and development of the human teeth, while the last came from his pen in 1897, just before he died. During these forty years Magitot wrote no less than sixty-five books, essays, pamphlets, etc., dealing exclusively with nearly every phase of dental embryology, histology, biology, pathology, hygiene, etc. No writer of any age has made so many, so varied, and so valuable contributions to dental science as Magitot.

The priceless services rendered by him entitle him to rank as one of the foremost investigators in odontology. He was a member of numerous scientific bodies and societies, whose members sincerely mourn his loss. It may be truly said, that when Magitot passed away from the scenes of human activity, dental science, not of France alone, but of the entire world, lost one of its noblest and greatest minds

The dental profession of the United States, recognizing and appreciating Magitot's services, keenly mourns and sympathizes with his bereaved family and the profession of France, by reason of his demise.

A. W. HARLAN,
J. W. WASSALL, } Committee.
LOUIS OTTOFY,

Chicago, September 1, 1897.

The Dental Digest.

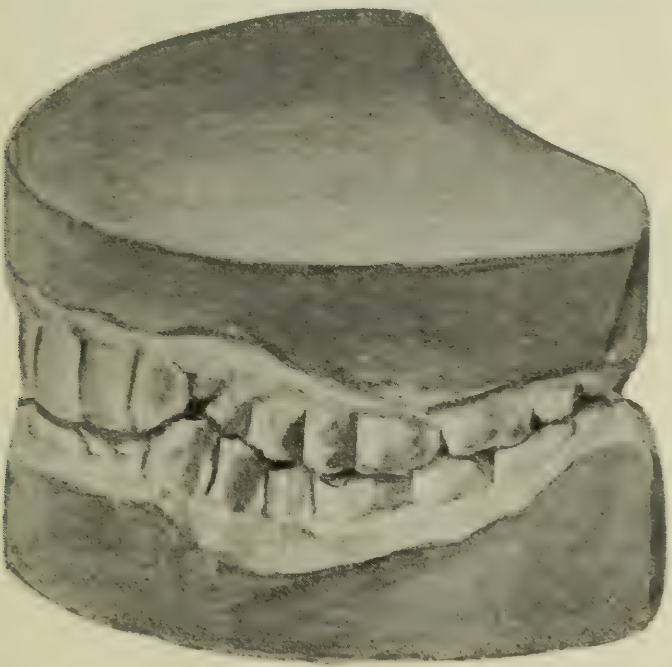
Vol. III. CHICAGO, NOVEMBER, 1897. No. 11.

Original Contributions.

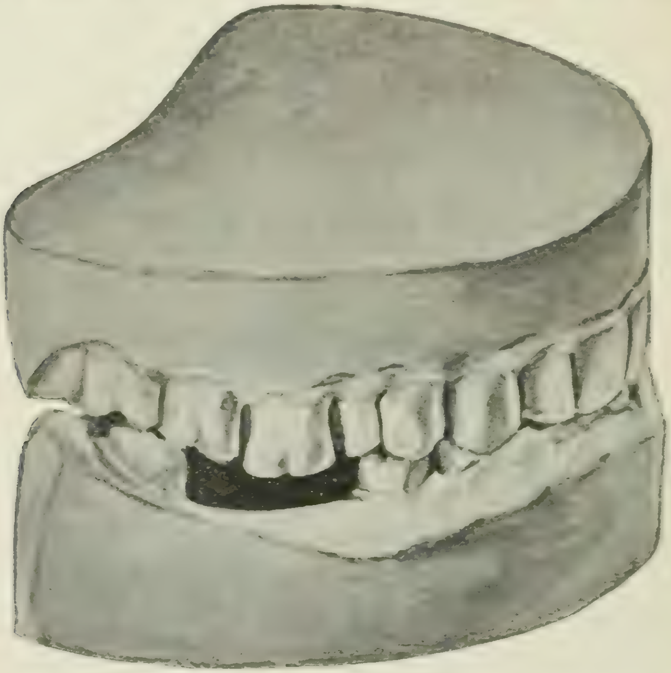
OPENING THE BITE WITH CAP-FILLINGS WITHOUT DESTROYING THE VITALITY OF THE PULPS.

By M. F. Finley, D.D.S. Read before Section on Operative Dentistry, American Dental Association, at Old Point Comfort, August, 1897.

I wish to present to your attention a case which has been of considerable interest to me in that I do not know of one similarly treated, nor have I found in my limited consultations with brother practitioners anyone who knows of a similar case; I therefore presume to ask your consideration of my statement of conditions and plan of procedure.



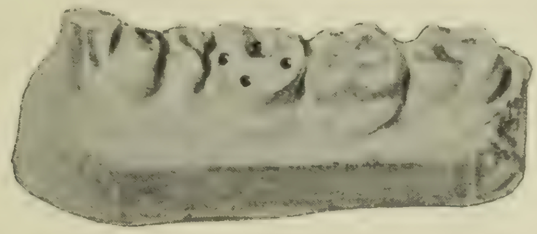
The patient, male, aged 62 years, had every tooth present in upper jaw and all in regular position, with exception of left cuspid, which closed inside its opponent of the lower jaw; the four incisors were very much worn, so that the palatine surfaces presented a straight line or inclined plane from labio-incisive edge to palato-gingival line. These same incisors when jaws were closed came in contact with and pressed upon the lower gums. The bicuspids and molars of the left side showed some effect of mechanical abrasion, the outer cusps lapping pretty well over the outer or buccal side of the lower teeth opposite, the bicuspids and molars of the right side showing scarcely any wear at all. On the lower jaw the first and second molars, right side, were lost, accounting for the last mentioned condition of the upper jaw, at the same time throwing the work of mastication almost entirely upon the left side of the mouth, and in consequence causing the wear spoken of on the teeth of that side on the upper jaw, the lower teeth suffering more loss of tissue than the upper ones, and also being, as it were, driven down into their sockets from the undue pressure, as appears in the model.

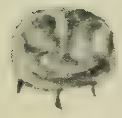


The lower incisors were worn to an inclined plane, presenting a surface opposite that of the upper incisors; the plane running from the palato—incisive edge to the labio-gingival line, and the incisive edges impinging on the upper gums when teeth were closed.

My belief is, that a good deal of responsibility for the excessive wear of the teeth and the depressed condition of the lower ones on left side was due to the malposition of the left upper cuspid (one of the main abutments of the arch being so misplaced as to offer no resistance to the settling together of the two jaws); whereas, if the cuspid had been in its normal position, or had been forced there by regulating at the proper age, it would have been quite impossible for such a condition to have existed.

The contact of the front teeth with the gums opposite in closing the mouth, and the close proximity of the outer cusps of the upper molars of left side with the gums of the lower jaw, forcing the food in the process of mastication in painful contact with said gums, caused the patient so much discomfort that he sought relief or at least advice as to what might be done to the best advantage.





After taking impressions and getting models my first thought or inspiration, if I may so call it, was to open the bite with cast or struck-up slabs of metal, or cap-fillings, as I have decided to designate them. How to attach the cap-fillings was the question to be solved. On consulting several of my brother practitioners, all at first seemed to oppose my plan as not being at all feasible. First thoughts or impressions are the most lasting and there was no exception to the rule in this instance, as I persisted in the belief that a way could be found to attach these cap-fillings which would be satisfactory alike to patient and operator.

My reasons for not crowning the teeth, as was advised by some, were, that too much tooth structure to satisfy my conscience would have been sacrificed upon the approximal surfaces in preparing for such a procedure; the teeth were not decayed or broken, but were worn down; also all the teeth had living pulps; and lastly I was afraid to disturb the relation of the gums to the necks of the teeth so much as would have been required to place crowns over the adjoining teeth, with no teeth missing to afford easy access to any of the surfaces to be cut away.

Now for my plan of procedure: The second bicuspid and first and second molars on left side lower jaw were restored or built up with cap-fillings, and the second bicuspid and third molar right side lower were crowned to carry a bridge to replace the lost first and second molars, occlusion being raised to correspond with opened bite.

In preparation for these cap-fillings the occlusal surfaces of the teeth to be capped were ground so as to make them nearly a plane, though not absolutely so. Then taking an impression in moldine and making die and counter with metal, I struck up pieces of nearly pure gold, about 32 gauge, to fit these ground surfaces, drilled four holes in the molars and three in the bicuspid, punched holes in the little pieces of gold to correspond in position and soldered platinum pins in them, and then united to them cusps struck up on a die plate and filled, thus making a cap of considerable thickness.

I should also say that the first piece of gold stamped to fit the tooth was thickened by a second piece stamped over the first and united to it before the pins were soldered in. Twenty carat solder was used in fastening the pins and filling the cusps and the two pieces were united with eighteen carat solder.

As to the location of the pin-holes in the molars, I drilled them at a safe distance from the margins of the occlusal surface of the tooth, in the centers of the four sides, by this means avoiding the cusps and thereby also the corunæ of the pulp; for, as before stated, all the teeth had living pulps.

As a result of my labors, the second bicuspid and first and second molars of the left side lower jaw were raised with cap-fillings, the approximal surfaces of the teeth not being disturbed in their relations one with another; and the second bicuspid and third molar of the right side were made to carry an all-gold bridge, thus raising the bite and restoring the lost masticating surface, preventing contact of the front teeth with the gums and opening the bite sufficiently to prevent pain during mastication. The cap-fillings were fastened with cement, as was also the bridge, and all were set at the same time so as to avoid irritation by pressure on a single tooth or on one side of jaw.

Let me relate an incident in connection with the construction of the bridge. When working on the third molar the patient related his experience in having a gold filling put in on the buccal surface of this tooth by one of our late esteemed friends in New York City, which required a little more than an hour in preparation of the cavity and insertion of the filling, and for which he paid two hundred and fifty dollars. Since that occasion he said he had often wondered for what purpose he had preserved this third molar, as it was really not of much use to him, the two teeth in front of it having been lost, but he now realized how it had been preserved to advantage, as it enabled him to have this bridge put in, serving as one abutment.

ANSWER TO A CRITICISM ON MY METHODS.

BY G. V. BLACK, D. D. S., M. D., CHICAGO.

My attention has been called to an editorial in the October issue of the *Western Dental Journal*, entitled "Upon the Subject of Alloys," in which the writer objects to an extract from my writings, which he says has been widely circulated. It begins as follows: "I do not care how you mix your alloys for filling, provided certain rules are employed." Following this the rules are given.

This sentence taken alone might be considered careless perhaps; but in the original context it followed a discussion of the merits of mixing in the palm of the hand and mixing in a mortar—and meant simply that either method might be employed.

The editor then proceeds to extol Dr. Fletcher's plan of mixing by shaking together the mercury and alloy in a bottle. He gives, however, no exact experiments going to show that this method is either better or worse than other methods of mixing. My own records of trials of that method show: 1st. That when the movement of the mass is carefully measured during setting, the method does not control shrinkage. 2d. That the mass so mixed makes an amalgam which flows more under a given stress than a mass made from the same alloy by other methods. 3d. That the mass so made has less strength and will be crushed with a less number of pounds pressure upon a block of given size than a mass made from the same alloy by other methods. These are the results of careful measurements by use of the best instruments yet known for the test of the physical properties of amalgams. If the editor of the *Western Dental Journal* has tests of a truly scientific character which give different results he should state them in detail, as I have given nearly all of mine.

The editor also objects to squeezing out surplus mercury after mixing with the alloy, asserting that changes in the qualities of the mass are produced. He does not say what changes nor does he seem to have any accurate data on the subject. I may state here that this is a subject concerning which there is nothing accurately known. The question involved is this—In the partial solution of an alloy in mercury for the formation of an amalgam, is the solution selective, or does the mercury dissolve one of several metals in preference to others of which the alloy is composed, and thus carry out in the portion removed by "squeezing out" a proportion of some single metal greater than that in which it exists in the alloy? I know of no experiments on this point that bear the stamp of accuracy.

In my own experiments as to possible changes in the qualities of the amalgam produced, I have found that when the same percentage of mercury remained in the mass a given alloy would make a stronger amalgam if so mixed that a little mercury could be squeezed out by the ordinary methods. I have supposed that this greater strength was due to the equalization of the mercury in the several portions of the mass by the squeezing.

The question as to whether or not what I have written upon the subject of amalgams within the last few years should be considered as "incorrect and unscientific" I will leave to the profession.

DENTAL PROSTHESIS.

By J. H. Kennerly, D.D.S., St. Louis, Mo. Read before the Missouri State Dental Association, at Pertle Springs, July 6-9, 1897.

It has always been a source of wonder to me that among so many papers read before the different dental societies of this country, so few are written on the subject of dental prosthesis. It may be because the writer does no prosthetic work, or because he thinks the making of an artificial denture of too little consequence to spend his valuable time in writing about. Be that as it may, dental prosthesis should still claim as much of our attention as any other special branch of our profession.

Quite recently I heard a paper read before one of our dental societies, in which the writer said that in many localities the dentist was judged by his ability to extract teeth, and he might well have added, his ability to make an artificial denture. While there are a number of our profession who do no prosthetic work, yet the time was with even these when they were like the graduate fresh from the colleges of to-day, glad to do even this part of, to them, the drudgery of their profession. Doubtless some of you have noticed that among medical students it is the ambition of every man to be a surgeon, yet how few among the great number graduated ever attain any very great prominence in this special branch of medicine? So it is with the great majority of dental students. When they have once reached the operating chair, and inserted a gold filling, all thought of plate work seems to have been forgotten in their great desire to become operators; and yet when they are graduated and located they many times find that their lack of knowledge concerning prosthesis is a very serious hindrance to their success as general practitioners. Many of them are compelled to take a post-graduate course before they can successfully meet competition, or else they send their work to some one who makes a specialty of this branch of dentistry. Time and money could have been saved had the student taken advantage of the facilities offered in the prosthetic laboratory of the college from which he graduated.

All of you have seen more or less of the work done in the so-called shops of the city; at least some of which seems to convey to the mind of the conscientious dentist the idea that those doing it cared more for the fee they were to receive for the work when completed, than for the comfort and appearance of the one who was doomed to wear the finished denture. The defects most commonly noticed are the disregard for color and size, and the lack of resemblance to the natural teeth where partial cases are made. To such I would suggest that they devote some time to the study of the table of "Temperament in Relation to Teeth," by Dr. James W. White in the *Cosmos* (I think of March, 1881), or as found in our standard text-books on prosthetic dentistry.

We frequently see cases where the teeth used are so white that they look ghastly, or so dark as to be noticeable even to those unacquainted with the profession. True prosthesis consists in imitating nature so nearly as to even deceive the elect. A much more artistic denture can be made by using plain teeth. True, it requires more time and skill to accomplish the work, but the results amply repay us for our labor. The first essential to a perfect fitting denture is an accurate impression of the mouth, which can be obtained only with plaster; wax and modeling compound may be used, but never with the same success as plaster. I have heard one or two say that they took all impressions with wax and modeling compound; still I cannot help but believe that their plates were more or less defective as regards fit. I believe that the more difficult the case, the greater the indication for the use of plaster. True, in these difficult cases the impression will break in removing from the mouth. If you will allow the plaster to set hard, so that it will break with a clear fracture, the pieces can be placed together after removing from the mouth, and a model made from such an impression will give a perfect fitting plate. A beautiful surface can be given to a model by coating the impression with sandarac varnish, to which some analine dye has been added after the varnish has set. Lay the impression in water while mixing plaster and mix plaster as thick as it can be poured.

Next in importance to the impression is the bite for articulating the teeth, for we all know that many otherwise perfect dentures are rendered totally useless by a defective articulation, caused many times by carelessness in taking the bite. The old practice of taking the bite in a roll of wax will do in partial cases and for trial articulation, but the patient should be compelled to return or remain in the office until the case can be perfectly articulated.

The investment of a case should be done with as much care as any other part of the work. In full cases the first half of the investment should just reach the edge of the wax plate, the second half covering the entire case. This brings the line of separation to the top edge of the plate, allowing the packing to be done entirely on one side, thereby lessening the accidental squeezing through of the rubber used for the body of the plate. After thoroughly vulcanizing the plate should be finished with all the skill the maker possesses.

MECHANICS OF BRIDGES.

By A. M. Tutt, D.D.S., Liberty, Mo. Read before the Missouri State Dental Association, at Pertle Springs, July 6-9, 1897.

Mr. President and Gentlemen: There is no pride in my heart as I appear before you to-day, for my first paper before this association must be the record of a failure.

For some time this subject has appealed to me, because I thought we should know something definite about the mechanical principles which underlie the dental bridge, and also because so little has been presented along this line. It was my intention to find the strength of the average bridge by the application of known mechanical laws and accepted mathematical formulæ, but the more I studied the question the more hopeless the task became, until finally the impossibility of attaining the end in view dawned upon me; so that now I have nothing to present to you but a ruin; and I present it in the hope that some of you may be interested in ruins, and that out of my failure there may come to someone else a greater measure of success.

A dental bridge is the simplest form of a bridge that we can construct, consisting as it does of a beam resting upon two or more supports. I am aware that bridges with only one support are sometimes placed in the mouth, but cases where these are justifiable are so rare that I have not taken them into account; also bars resting on fills.

From a mechanical standpoint, in constructing a bridge we must take into consideration three points, viz, the piers or supports, the load or force they will have to withstand, and the strength of the material used with respect to the load. If we do not understand something of these things our work is empirical and not scientific.

First as to the supports—the engineer in bridging a river can make and place his piers to suit himself, but we must utilize the ones that are already in place. These piers should be artificial crowns upon the natural teeth or their roots, and these teeth and roots should be strong and firmly fixed in their places. The artificial crown should be one whose attachment is secured by a post inserted in the enlarged pulp-canal, or by a band grasping the root just under the margin of the gum. If we are to use the crown with the post, we should be careful of two things: first, in enlarging the canal, the enlargement should be carried toward the palatal portion, for in the anterior teeth, at least, the direction of the force against them is outward, and if the anterior segment of the root be weakened it is liable to fracture; second, the post should be as long as possible and flattened, because a round post is needlessly strong in its transverse diameter, and not strong enough, unless too large, in its anterio-posterior diameter.

If the attachment is to be secured by a band grasping the tooth at the cervical border, the one thing needful is a close adaptation of the band at the neck of the tooth. It is strange that so little attention is paid to this important factor, when the life of the whole structure depends so much upon it. Perhaps no dentist will deny that this is good practice, yet there is found a very small percentage of crowns that are not lacking in this respect. Too much dependence is placed in burnishing the band down to the root, and not enough attention is paid to giving the root the proper shape. The dentist who depends upon burnishing is laying up for himself trouble in the days to come. We can expand gold in the mouth, but we cannot contract it.

I have not thought it necessary to go into the details of constructing the crowns, as that is more especially a matter of manipulation. Almost every dentist has his own method of making crowns, and no doubt most of them are good, but instead of advocating any one, I desire to call your attention to the second point, the load the bridge will have to carry. By the load we mean the force or forces applied to the structure. It is obvious that the greatest force which will be applied to a bridge in the mouth, and the only one we need to consider, is the force which the muscles of the jaws exert in closing the teeth—the force of occlusion. This force is variously estimated and is given all the way from 30 to 500 pounds, but probably the most satisfactory results on this point have been obtained by Dr. G. V. Black. His experiments gave results ranging from 30 to 270 pounds, and he concludes that we should always allow for a force of 150 pounds. But engineers always construct bridges to withstand about five times more than the actual weight that is likely to be placed upon them. So if we apply this rule, we should allow for a force of 750 pounds.

Now, the *stress* on the beam of the bridge is the reaction in the beam—due to the load—per unit area of its cross-section, and is measured in pounds per square inch. For instance, if we let P represent the force applied in pounds, and A the area of the cross-section in square inches, then the mean intensity of the stress on the section will equal $\frac{P}{A}$, which will be the number of pounds per square inch.

If our beam is regular in shape, we have only to take the stress on the cross-section and multiply it by the length of the beam; but the beam in the dental bridge is never regular, so we can calculate the stress only on any given cross-section. But since we know that the strength of the beam is equal only to the strength of its weakest point, we can take the smallest cross-section and find the minimum stress of the whole beam.

Let us take a particular case for example. I found in a bridge, made by a well-known member of this association, the area of the smallest cross-section to be $\frac{1319}{147456}$ of a square inch. Now, taking the force to be 750 pounds, and applying the above formula, we find the stress on this particular bridge, at its weakest point, is about 45 tons per square inch.

If I could have taken a beam of gold of the same dimensions as the above, and determined the amount of force it would withstand, I could then have compared it with the stress it would have to withstand. But when I came to consider the strength of the material used I found myself completely at sea. The beam of the bridge consists of an alloy of unknown proportions. Nothing is known of its elasticity or of its resistance to strain, and its varying density presents a combination upon which no calculations can be made.

The only possible way to find the strength of a bridge is by actual experiment, and inasmuch as no two bridges are the same in size or form, a separate experiment will have to be made for each structure. And so we conclude that there is nothing left for us but to have faith that when we construct our bridge no force that can be applied to it in the mouth will break it.

TREATMENT AND FILLING OF ROOT-CANALS.

By H. H. Sullivan, D.D.S., Kansas City, Mo. Read before the Missouri State Dental Association, at Pertle Springs, July 6-9, 1897.

The subject that I have chosen is one which graces the pages of all our meetings, but you will soon discover that this is written solely from my own mode of procedure in the cases cited, and not taken from any text-book. It will greatly assist me if you will watch the cases, as they are all numbered 1, 2, 3, etc., and it will save repeating much. I believe there is nothing in operative dentistry that has given the average practitioner so much worry and thought as his inability to treat and fill root-canals. The main cause does not lie in the want of literature, for you cannot pick up a dental journal to-day without finding from one to five articles or practical points on the treatment or filling of pulpless teeth; the text-books are also full, yet there is a woeful lack of knowledge upon this subject, and why? Because we have not yet awakened to the importance of saving the organs of mastication. The average dental student does not learn the mechanical application of medicines and fillings of this kind, because he thinks it of too little importance; he would rather put his time on Anatomy, Chemistry, Physiology, Materia Medica or Therapeutics, and possibly Orthodontia; and he reasons that when he has a city practice, in six months after graduation, his patients will be of the refined order that visit him every six months and send their children oftener, and he expects to be thus relieved of the ordeal of treating exposed pulps, abscessed teeth, pericementitis and a score of similar disturbances. But when he does enter the realm of an office life, and finds to his sorrow that four of five patients who come to him have one or more teeth needing treatment, his heart sinks and he calls in review the professors who lectured on that worn out subject—"treatment and filling of root-canals."

I will now cite the first case as it presents itself to one of our new graduates: A lad of 15 years presents himself with an aching lower first molar, which has kept him awake two or three nights. The doctor carefully examines the case and finds a simple exposure, and the pulp in a state of acute inflammation; but owing to the abundant supply of saliva he cannot secure dryness long enough to make an application of medicine to quiet the pain, so he adjusts the rubber dam, dries the cavity and places in it a pledget of cotton saturated with chloroform. This partially relieves the pain, and he then punctures the pulp with a fine broach and again applies the chloroform, which this time stops the pain. The following, to reduce inflammation, is now applied to cavity on cotton: Tannic acid, cocain crystals, oil cassia; and sealed in with a pledget of cotton dipped in chloro-percha. The next morning the following is used: Tannic acid, cocain crystals, oil cassia, arsenious acid, small drop. Seal as before or use cement. Never apply a devitalizing agent later than 3 p. m., and not then unless you have first reduced the inflammation, or severe pain will keep your patient awake. Do not use sandarac varnish to stop a cavity in which you have an exposed pulp, as the alcohol will nearly always increase the pain.

Case No. 2. Acute abscess of first molar. Paint gums, using camel's-hair pencil, with tr. aconite, tr. iodin, aaʒi, chloroform, ʒss. Then gently remove all decay and foreign matter from cavity with excavators, wash with tepid water from a syringe, open all of chamber; take a small broach and enter canal, removing and cleaning until you have reached the apex; then with a smooth broach, dipped in sandarac varnish and wound with a few threads of cotton dipped in peroxid of hydrogen, cleanse the canal by a pumping process, being very careful that the cotton is not tight enough in the canal to force any medicine or debris through the foramen into the apical space. If buccal canals are so small that you cannot enter them, place a pledget of cotton dipped in a 50 per cent solution of sulfuric acid over them for a few hours, and then with a fine broach gradually enter and drag out the softened substance until you find your way to the foramen. Finally, dip small threads of cotton twisted to form the shape of a pulp in oil of cassia and iodoform, and insert with smooth broach to the end of canal; place a tight pellet of dry cotton in cavity of tooth, paint gums again and dismiss patient for 24 hours. Then repeat treatment and seal cavity with cotton dipped in chloro-percha, and if it remains quiet 24 hours you may proceed to fill canals, capping the canal filling with cement. You will find few cases in which 24 hours will not be time enough.

Case No. 3. Chronic abscess. Remove contents of cavity and canals in manner indicated in case No. 2, following with peroxid of hydrogen; when this ceases to effervesce, use a 50 per cent solution of sulfuric acid and dilute with a saturated solution of bicarbonate of sodium. Treatment. Fill canals with cotton saturated with oil cassia and iodoform, as in a case of acute abscess; allow this to remain in the tooth four days, protected by cotton saturated with sandarac varnish; in the center of stopping, while you are inserting the same, hold an instrument used for filling root-canals, which extends through the stopping, and with water syringe dampen stopping; then remove canal plugger, leaving a small opening for a vent, through which the gas can easily escape, and treat until no odor is perceptible.

Case No. 4. Where absorption of root has taken place, leaving sharp spiculæ at apex, which continually irritates the pericemental membrane. No fistula. First make a fistula by the use of a serrated plugger point, dipping the instrument in 95 per cent carbolic acid; dry gum over apex and touch instrument to point where fistula is desired; the acid will form an eschar, which you can remove with the serrations of plugger point; dip the instrument again in the acid and repeat application; by this means you will soon, without pain, reach the cavity at apex of root, which was formed by the abscess which caused absorption of tooth. Now enter fistula with a large round bur and cut away any ragged edges of process and tooth that you can reach with this instrument, in fact make cavity quite smooth; when you have accomplished this, wash out cavity with boiled water two parts and some antiseptic mouthwash one part; then with a pair of approximal trimmers file and polish end of root. Treat canal the same as in chronic abscess.

Case No. 5. Anterior teeth with fistulous opening. Remove contents and cleanse as described in case No. 2; force a little peroxid of hydrogen through fistula; cleanse this out by the use of cotton on broach until canal is almost dry; use a 50 per cent solution of sulfuric acid as described; dry again; saturate a loose pellet of cotton with oil cassia and place in pulp-chamber, and with a hot air syringe, or ordinary chip-blower heated from the alcohol lamp, drive the oil into the tubuli until none remains on the cotton, which is indicated by the cotton turning brown. Direct patient to exhale while you force the air from syringe into canal, and thus avoid irritating your patient's throat, should you not have the rubber-dam adjusted, and making him cough, which will cause delay and possibly dampen the canal; remove cotton, force a couple of blasts of hot air into the open canal, which will drive out all surplus oil and dry the canal; now with cotton twisted on broach and dipped in chloroform cleanse pulp-chamber of excess oil, dry once more, and fill canal immediately, forcing filling through fistula.

Case No. 6. Extirpation of pulp and root filling accomplished at one sitting. I cannot perform this operation except upon a chosen few; they are of a peculiar type, and their general build indicates their nature, one which will endure any amount of punishment with but little retaliation. The operation is performed in the following manner: Adjust rubber-dam, dry cavity, and with sharp excavating burs and excavators clean cavity of all debris; apply chloroform for a minute or two, and while this is in place prepare a pledget of cotton with a saturated solution of hydrochl. cocain crystals dissolved in oil of cassia; remove cotton from cavity and apply the pellet last prepared. Now with hot air from the chip-blower drive the cocain into the pulp, and when all the fluid is thus forced out of the cotton, remove, and with a sharp bur revolving at a high rate of speed open the pulp-chamber to its greatest diameter; if pulp is sensitive, repeat cocain; then take a small broach and insert it at the side of pulp close to the canal, and push it gently but firmly to the apex with a straightforward movement; rotate the broach from left to right until you feel that you have a good grip on the pulp; then with the same rotary motion and a pull, you will remove all the remaining portion of pulp, with but little if any pain. Hemorrhage will follow this, which is easily checked by cotton wrapped on a broach and dipped in chloroform and applied to canal down to apex, which will coagulate the ruptured blood-vessels. Now dry canal and fill immediately; you can follow this treatment with any mode of crown-filling you choose at the same sitting, without pericementitis following.

Filling root-canals without a fistulous opening. Have cavity and canal free from all foreign substance, thoroughly dry and aseptic. Taking up the root filling from each case as I left it in our narrative of treatments, I would proceed to fill the canal by dipping one of these fine canal pluggers in thin chloro-percha and inserting it at the side of canal, and slowly pushly this up to the apex, keeping it on the same side of canal all the way, thus allowing the air to escape from the canal. When the apex is reached, rotate the plugger until the end of canal is sealed, and proceed with the same operation until you have canal two-thirds full of chloro-percha. Now take a gutta-percha point, and clip the sharp end off until you have rather a stiff point, and grasping the cone at larger end with a pair of college pliers, force it into the canal as far as possible, having the cone cold so it will not bend easily. If this does not fill the canal, insert another and another until the canal is full. Then with a hot instrument cut off all the gutta-percha and chloro-percha that has pushed out into the cavity of tooth, and with chip-blower warm the canal filling, and with larger pluggers force the filling up as far as you deem necessary to form a perfect obliteration of all space in the canal; the chloro-percha will assist very materially in sealing all little spaces. Now cap this root-canal filling with a good cement, and you have a good foundation upon which to build a filling.

Filling canals with a fistulous opening on the gum. Taking up the work where we left the treatment, you proceed as directed in above filling of canal to the point where we stop at two-thirds the way up the canal with chloro-percha; fill canal full of chloro-percha, and with a pumping motion force it through the foramen. Fill apical space and continue to force the same by adding more chloro-percha until it is forced out at the fistula. Now fill canal with gutta-percha points as directed. When this is accomplished fill a syringe with tepid water and some antiseptic mouthwash, insert the nozzle in fistula and force the contents of syringe into the cavity in process, which will cause all the surplus filling to be forced out at the side of syringe.

I do not believe in the use of copper, wood, lead, silver or gold wire points, nor do I believe Salol by itself will ever make a good root-canal filling. I do believe that a good practice would be to line the canal a few days after you had sealed the apex, and am sure no trouble would arise with damson resin and paraffin, equal parts. This would seal the tubuli and keep moisture from entering, and if such should occur, would avoid disintegration of a gutta-percha root-canal filling. Discoloration never occurs if root-canal be properly filled before the tooth begins to discolor.

Osteoma of the Lower Maxilla.—M. Lejars, in *Bulletin Medicale*, quotes the case of a woman, aged 42. For about ten years she was troubled with a small indolent tumor situated at the level of the ascending ramus of the mandible; latterly this tumor had increased to the thickness of a chestnut and stood out very prominently. It was hard and formed part of the bone; quite recently it had caused her severe pain. No dental anomalies were present. The ablation was accomplished by means of the chisel and mallet; the histological examinations showed that it was formed of pure osseous tissue. A cure resulted.

Illinois Cocain Law.—The State Legislature of Illinois has enacted the following law respecting the sale of cocain: Section 1. Be it enacted by the People of the State of Illinois, represented in the General Assembly. It shall not be lawful for any druggist or other person to retail or sell or to give away any cocain, hydrochlorate or other salt of or any compound of cocain or preparation containing cocain, or any salts of or any compound thereof, excepting upon the written prescription of a licensed physician or licensed dentist, licensed under the laws of the state, which prescription shall be filled only once: Provided, that the provisions of this section shall not apply to sales in the usual quantities at wholesale by any manufacturer or wholesale dealer, when such manufacturer or wholesale dealer shall have affixed to the box, bottle or package containing such cocain, hydrochlorate or other salt or compound of cocain or preparation containing cocain, a label specifically setting forth the proportion of cocain contained in any preparation. Section 2. Every person who shall be found guilty of violation of the provisions of this act shall, for the first offense, be fined a sum not less than ten dollars, nor more than fifty dollars, and for each subsequent offense not less than fifteen dollars, nor more than two hundred dollars, or imprisonment in the county jail not exceeding thirty days, or either or both, in the discretion of the court.

Digests.

PATHOLOGIC CONDITIONS OF THE PHARYNX AND CONTIGUOUS STRUCTURES DURING EARLY CHILDHOOD —PRIME FACTORS IN THE ETIOLOGY OF MALFORMED MAXILLÆ AND IRREGULAR TEETH. By W.A. Mills, D.D.S., Baltimore, Md. Read before Dental Section, American Medical Association, Philadelphia, June, 1897. The physical functions of the nasal cavities are, viz.: They elevate the temperature of the inhaled air, give it moisture, and purify it by arresting all particles of dust and other substances which it may contain. They act as resonance cavities for the voice, and are also the seat of the sense of smell. A professional experience of more than twenty-five years has taught us that any inflammatory lesions found in children between the ages of four and twelve, which obstruct these natural conditions, are, in the majority of cases, the chief agents in the causation of malformed jaws and the consequent abnormal alignment of the teeth. We cite the following case in our practice:

A boy, age seven years, was brought to the office to have a tooth filled, which was supposed to cause pain in the right ear and right angle of the inferior maxilla. There was almost complete obstruction of the nasal cavities, face pale, anemic and haggard looking, features contracted or pinched at the angle of the jaws and beneath the malar processes, giving the characteristics of a mouth-breather. On examination we found a small cavity in a molar tooth, which in a manner could have caused the pain. This was filled but gave no relief. The tonsils were greatly enlarged, almost meeting at the median line. Deglutition was both difficult and painful. On examining the superior maxillæ we noticed a very perceptible contraction on both sides, anterior to the first permanent molar tooth, with a decided inclination of the roof of the mouth to become elevated. We informed the patient's aunt of the state of affairs, with the assertion that unless something heroic was done quickly, and by a rhinologist, very serious consequences would be sure to follow. Six months later the patient returned to the office. A specialist had been consulted and he had removed some adenoid growths and was still reducing the tonsils with the galvano-cautery. We found a bright and rosy-faced boy with normal respiration, and imagine our surprise when upon examination we found no signs of the former contractions of the jaws or rising of the arch, but all outlines were normal.

This particular case demonstrated that either the enlarged and diseased tonsils or the adenoid vegetations, or both, were the prime factors of the causation, not only of the malformations of the maxillæ but also the oral respiration. If a correct diagnosis had not been made, and only palliative treatment been given, there is no doubt that a case of V or saddle-shaped arch would have been developed, with irregular teeth as concomitants, especially as patient's parents are full-blooded Germans and have large jaws and teeth.

The starting point in the majority of these cases has its origin in some slight irritation of the mucous membrane of the throat, especially the tonsils. We would urge upon the medical and dental practitioners the importance of being ever on the alert to discover the first sight of any inflammatory manifestation in the throat or nasal cavities of children, as so many lesions are prone to develop along the lines of the respiratory passages without in themselves showing any very acute symptoms; and if permitted to continue without proper treatment of the disease and the malformation, they will in some cases defy all remedial agencies. Dr. M. H. Omyer says: "It is my opinion that an inflammation of the tonsil and surrounding tissue will cause tention of the palato-pharyngeal and palato-glossus muscles; if this be so, they would naturally pull the lateral portion of the arch downward and inward; especially with children when their bones are soft and yielding."—*Ohio Dental Jour., Sept. 1897.*

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QUEER THINGS ABOUT MANKIND. Few people are aware of the wonderful engineering skill and ingenuity with which their bodies are constructed. If patents were taken out for all the clever contrivances to be found there, it would probably keep the staff of the Patent Office going for three months.

Who would think that in his eye there is a block and pulley, or "tackle" as the sailor calls it, as complete and efficient as that with which a ship hoists her mainsail? There it is, however, and whenever you look at the tip of your nose the muscle that moves your eyeball works in it. There are several of these pulleys in the body.

Another clever dodge in Nature is shown in the bones of the face. Accomplished engineer that she is, she always uses the smallest quantity of material sufficient for strength. In making the bones of the face she wanted a large surface to which to attach the muscles; but as she didn't wish to encumber us with heads as heavy as an elephant's, she burrowed hundreds of little holes in the bones, called air-cells, and thus secured strength, large surface and lightness. In the same way she made the long bones of the legs and arms hollow in the middle. What a saving this is may be understood from the fact that a hollow shaft of bone or iron—or any other substance—is about twice as strong as a solid shaft containing the same quantity of material.

When you get a severe cold you are apprised of the presence of another cunning device—the Eustachian tube. This tube is two inches long and passes from the inside of the ear to the back of the mouth. It was put there to keep the air at the same pressure inside the drum as outside. Otherwise there would be no vibration of the drum and you would be almost stone deaf. When you get a bad cold this tube sometimes becomes inflamed and blocked, and you are made quite deaf.

Adam's apple, if it was that fruit which brought into the world all our woe, is now a useful organ. It serves as a sort of storage cistern of the blood for the supply of the brain. When the heart sends up too much blood Adam's apple intercepts it, or part of it; and when the direct supply from the heart temporarily runs short Adam's apple gives up its store.

The liver is a most wonderful organ, containing facilities of several kinds. But perhaps the most wonderful thing in it is that part set aside to look for and arrest poisons.

All the food that you eat, except the fat, has to pass through the liver before going to the heart and body generally; and in the liver there appears to be stationed something in the nature of custom officers, who examine every bit of food and remove from it all substances dangerous to the body. But they are capable of dealing only with the small quantities in ordinary food and when you eat poisonous mushrooms or mussels they are quite overpowered.

Another protection from danger is afforded you by the supply of a small quantity of hydrochloric acid to the stomach. There are little machines in the stomach specially designed for the manufacture of this acid from the salt you eat, and they are so regulated that they produce a quantity equal to one-fifth of one per cent of the contents of the stomach. Experiment shows that this is exactly the percentage required to destroy the thousands of microbes that we swallow in our food. But for this thoughtful provision of Nature we would probably get a new disease with every meal.

Most people know the use of the epiglottis, which saves us from imminent death every time we swallow a bit of food. At the back of the mouth the air-passage and food-passage cross each other, and whenever we swallow food it would inevitably go into the windpipe and choke us, only that this little body pops down and covers the entrance. It is like the policeman who regulates the traffic where streets cross.

The semicircular canals, for centuries a physiological puzzle, are an extraordinary device for enabling us to keep our balance. They are little channels, hollowed out, in connection with the ear, in the bones of the head, and partly filled with fluid lymph. As our head or body sways the fluid moves, acting like a spirit-level, and informing the brain whether we are standing on the perpendicular or at a dangerous angle.

One of the most valuable of all inventions made for our comfort and safety is the perspirative gland. It acts like the safety valve of a boiler, letting off heat when we are becoming dangerously warm. If our temperature rose seven or eight degrees we should not have twenty-four hours to live. The value of the sweat-gland is therefore obvious. In fact, without it a football or cricket or rowing match would be out of the question, and we could not safely walk at a speed of more than a quarter of a mile an hour. Nature has taken good care, however, that we should not run short of these useful organs and has given us no less than 2,500,000 of them.

So inventive was Nature when constructing our body that the difficulty is to stop enumerating her clever ideas. She saw that we would very soon grow tired if we had to be held up by two legs by means of muscular effort, so she made the hip-joint air-tight, and the pressure of the air alone keeps the leg in its place. At the same time, although she has not discovered ball-bearings, she made the ball of the leg bone and the socket of the hip so smooth and oiled the joint so well that the friction is practically nothing.

When the spinal canal in the backbone was made, great pains had to be taken, for, while it consists of many pieces and is freely movable, it contains the precious spinal cord, one nip of which would be fatal. The measurements are so accurate that there is no danger of such an event. Wherever there is much and free motion, as in the neck, the canal is large and open and a nip is impossible.

Again, the heart and lungs are, of course, the very basis of our life. They are in constant motion, and if allowed to rub against the chest walls around them, they would either get inflamed or wear away by friction. Nature has, therefore, surrounded them with a double sac, and between the outer and inner layers of it she has placed a quantity of lubricating fluid.

But the most remarkable of all devices is that for splicing broken bones. The moment a bone is broken a surgical genius is at once dispatched from the brain to the spot. He proceeds to surround the broken ends with a ferule of cartilage. This is large and strong, and takes quite a month to complete. When the two ends are held firmly and immovably in place by the ferule, this mysterious surgeon begins to place a layer of bone between them and solder them together. And when the layer is complete and the bone securely welded he removes the ferule or callus, just as the scaffolding is removed from a finished building. Often a bone does not get broken for two or three generations, and yet this power to form the callus and knowledge of how to do it is never lost.—*Scientific American.*

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VESICATION PRODUCED BY COCAIN.—Broeckaert recently observed a remarkable vesicant action due to application of cocain solution. He had been consulted by an army officer on account of a slight obstruction caused by a certain degree of hypertrophy of the inferior turbinated bone. In order to anesthetize the mucous membrane he was about to apply cocain, when the patient interposed and declared that it would produce dangerous effects; that once an application had been made to the skin at the seat of a boil, and in the course of a few hours an eruption occurred which he could compare only to the effect of a fly-blister. Broeckaert could scarcely credit the statement, but let fall a drop of ten-per-cent solution upon the man's forearm. Two days later the man returned and surprised him by showing an eruption of small vesicles, the extent and form of which corresponded exactly to the spot upon which the cocain had been dropped. To dissipate all doubt he tried a new and decisive experiment. The patient's eyes being closed, he applied to one arm a drop of a freshly prepared cocain solution and to the other a drop of distilled water, the patient believing that both were solutions of cocain differing only in strength. The experiment corroborated the patient's former statement; the cocain solution alone caused vesication. The effect in this case was in many respects comparable to that of cantharidal plaster. At the end of a certain time the vesicles dried up, but they left behind them a slightly pigmented cicatrix, proving that the irritation had been comparatively strong and had even led to the destruction of some extravasated red corpuscles. Curiously enough, corrosive sublimate, carbolic acid, iodoform, and other more or less irritant substances had no such effect upon this man. He was robust and in good health, but had previously had some arthritic manifestations.—*Revue Inter. de Rhinologie.*

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DRAINAGE AND IRRIGATION OF THE ANTRUM. By E. L. Townsend, D.D.S., Los Angeles, Cal. Read before Pacific Coast Dental Congress, July 13, 1897. Drainage, as applied to the antrum, means the opening and insertion of a tube into the antrum, allowing the contents to drain into the mouth, a practice that fails to accomplish the result desired; for, if the tube is short enough to allow the secretions to drain through the tube, granulations form about the end of the canal, producing more or less soreness and eventually closing the end of the opening. If the tube is long enough to prevent granulations forming over the end, it then prevents the very object it is intended to accomplish. Permanently fastening the tube to adjacent teeth is open to the objection that pus will seep between the tube and canal, thus becoming a source of irritation and infection, and establish a place that it is impossible to properly cleanse. And even if the drainage tube accomplished all that it is intended to do, it yet remains an undesirable method of treating these cases, on account of the disagreeableness of a constant dripping of pus into the oral cavity. A cleaner and more comfortable method is the complete plugging of the canal—the removal of the plug and a thorough irrigation of the antrum.

In making the opening into the antrum, a hole of sufficient size should be made to accommodate a plug made from No. 5 wire, standard gauge, having plugs and syringe nozzles drawn to the same gauge. In opening the antrum the hole should be made as direct as possible, and usually at a point occupied by the first molar.

After the hole has been made, the plug is inserted, an impression taken, and the plate made, which may carry the teeth or not, as circumstances dictate. During the interval between the taking of impression and insertion of the finished plate, a temporary plug should be worn, so that the hole shall not contract. This appliance soon becomes comfortable and is worn with no greater inconvenience than the ordinary denture, effectually preventing the contents of the antrum reaching the mouth, and upon its removal affording an opportunity for thoroughly cleansing the parts.

An ordinary fountain syringe, holding a quart or more, with a point bent to a right angle, is the most effective apparatus for irrigating the antrum. The syringe nozzle should be inserted into the opening, and the patient's head lowered to a point that will prevent any of the fluid running into the throat. A quart or more of slightly saline or alkaline solution is run through the antrum and out of the nose, thus completely washing the cavity and nasal passage. I have found it useless to try to cleanse the cavity by a spray or small amount of water. What it needs is a flood, something that will loosen the adherent, purulent mucous secretion and carry it away. The patient can attend to this, and irrigate as often as the conditions require, which ordinarily is from two to six times a day. It will be noticed that this treatment does not contemplate a speedy cure, but the preparations are made for a permanent opening and a lengthy treatment of the disease. In fact, I consider that the benefits arising from the opportunity to effectively cleanse the parts about the opening of the antrum into the nose compensate for the inconvenience and trouble. As most of the cases arise from a catarrhal condition, this gives an opportunity for treatment not offered by any other method, and so far as it has come under my observation it has been effective and has produced what is ordinarily termed a cure.—*Pacific Stomatological Gazette, Sept. 1897.*

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HINTS IN HOT WEATHER. By a Lazy Man. If you add two per cent of silica to gold plate to be melted, you can accomplish it over the flame of a common candle.——Apply powdered or lump resin to the driving belt of your engine to prevent it slipping. ——If you remove gum blocks from the flack and rub the joints very lightly over fine sandpaper before replacing them, they can be packed much cleaner. Where there is any vestige of wax there will be unclean joints.——Wash your amalgam with a few drops of sulfuric acid added to water.——For sterilizing instruments, boil them for five minutes in a one-per-cent solution of carbonate of soda. It will preserve them from oxidation, as well as make them aseptic. I like the Empire sterilizer.——Do not use spunk for drying cavities unless you are sure it leaves no debris behind. Do use it often instead of the rubber dam. It is handy on the tweezers as a conveyer for large amalgam filling in posterior cavities. Very useful, too, to smooth off ends of filling.——Oxyphosphate is the best thing with which to repair broken teeth of plaster models, if you can wait an hour till it sets. Cut strips of the various grades of sandpaper you use with the split mandrel of your lathe. Fit them in tight. Slip them off. Glue them, lay aside for use. Also cut down corks to cones, glue on pumice or corundum stone. A very coarse English corundum stone makes one of the best coarse polishers.——Keep your corundum wheels out of the hot sun.——Dr. C. H. Land, of Detroit, once told me that he found heavy pasteboard made a capital vulcanizer packing, and that where vulcanizers leak, dusting on corn starch will stop it.——When you use alcohol to cut or sharpen a corundum wheel, do not attempt to use it until it is absolutely dry.——To keep your solder in place, add a little gum arabic to your flux, and rub with the borax and water on the slate.——To make sticky wax for holding clasps in place, use resin two parts, beeswax one.—*Dominion Dental Journal*, *Oct. 1897*

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TUMORS RESULTING FROM SEPTIC PULP OF TEETH.

By G. Lenox Curtis, M.D., New York. The object of this paper is to illustrate several of the most prevalent tumors of the jaw, evolved by septic material discharged from the decomposing pulp of the teeth. It is the intention to speak of them from a practical standpoint, and the desire is to inform those interested how to treat and prevent their recurrence.

Experience leads me to believe that the origin of fully ninety per cent of all tumors of the jaw, face and neck can be traced to diseases of the teeth, and in many cases to the septic pulp. The most common of these tumors is the alveolar abscess, the contents varying from mere gas to thick pus. The treatment has been described so often that I shall not here repeat it, further than to say—remove the cause and prevent recurrence. This can be done by cleansing the pulp-canal, filling it perfectly, dissecting away the sac, roughening the surface of the bone sufficiently, and promoting healthy granulation to fill the cavity. Another treatment is by extracting the tooth; this course, which is so often considered sufficient, does not always effect a cure. Whenever a decomposed pulp exists a cavity in the jaw will be found, at or near the apex of the root. The exception, I believe, is only when the peridental membrane has not been inflated so as to produce an abscess sac, but has immediately succumbed to the septic influence of the pulp, the gas passing through the canals of the bone to some remote part, and there forming the tumors. This may be so gradual that the attention of the patient has not been called to it, except by the soreness and swelling that might result from the primary attack, and is recalled by the patient only when questioned about it. These cysts may be simple or multiple, and I have seen as many as three in one-half of the upper jaw.

Whenever the pulp of a tooth is found to be devitalized, and is not removed and filled as suggested, you can depend upon its causing trouble; then no time should be lost in preventing infiltration or increase of the area of the disease. At this writing I have under treatment three cysts of extensive proportions, which are traceable directly to this cause. In the first case the swelling appeared in the nose, plugging the left nares, along with a perceptible enlargement between the internal canthus of the eye and the wing of the nose. Searching for the cause, I found the pulp in the first bicuspid dead and putrescent. This tooth was extracted by the patient's dentist, who claimed he did not find it abscessed, and the tooth, being of good quality, was cleansed, filled and replanted. The swelling somewhat diminished, but recurred in two years much increased in size. Examination of the alveolar process showed a normal condition. An opening was made into the tumor under the lip, in line with the wing of the nose, from which exuded a half ounce of thick greenish mucilaginous fluid. The sac had gradually increased until the substance of the superior maxillary bone had been destroyed from the point where I entered the sac to the nasal process, leaving only the periosteum intact. Even the inferior turbinated bone was destroyed. The walls of the nares offering the least resistance, the tumor gradually followed that direction until the left nares were completely plugged. The sac was curetted and the cavity treated and healed, care being observed to force back the periosteum so that the normal opening of the nares was restored.

The next case was where the pulp in the left central incisor had for many years been dead, presumably from a blow, as there was a slight fracture on the cutting edge. The pulp was opened into from the palatal surface of the tooth, and fully two drachms of pus flowed therefrom. The pulp-canal was then cleansed and permanently filled, an incision made through the gums and periosteum from the labial surface, exposing the end of the root of the affected tooth. A deluge of thick, yellowish fluid flowed into the mouth —in all two ounces. It was found that all the bone extending from the right lateral to the left first bicuspid to the anterior boundary of the antrum and the nasal process was completely absorbed, leaving only the periosteum intact. There was also considerable bulging of the left nares and the roof of the mouth. This almost plugged the left nares; in fact, the floor of the nose was considerably elevated and the bone under it was completely destroyed. Fully two-thirds of the roots of the central incisors, left lateral cuspid and first bicuspid teeth penetrated this cavity. The patient never realized any trouble from this tumor, except occasionally for several years a little tenderness on pressure at the side of the nose, until about one month since, when the face suddenly swelled and was diagnosed by this dentist as the result of an alveolar abscess attached to the root in question. When the sac of the tumor was dissected away, it was found that immediately surrounding the affected tooth there was an independent sac, which was similar to that found in alveolar abscess and which contained the pus referred to.

The third, which was still more extensive, involved all the alveolar process of the left superior maxillary, from the third molar to the lateral incisor and extending to the molar. The face was considerably deformed by an enlargement below the molar about the size of a small hen's egg, which was apparently as firm as bone. Nearly the entire antrum was found occupied by this tumor, the contents being almost a jelly, of a slightly yellowish color, in quantity about three ounces. The etiology of the tumor I believe to be traceable to the back roots of the second molar, which had many years remained in position and were found penetrating the cyst.

These tumors are, fortunately, not numerous, and would be much less so if dead teeth were properly treated or promptly extracted. I could cite many cases of adenitis and inflammation of the ducts, also the bursa of the floor of the mouth, of osteoma and similar ailments, traceable to septic diseases of the pulp of the teeth, but I feel that it is not necessary to here dwell, or to impress you further on the importance of prompt and thorough removal of any such influence in the mouth.

In February, 1888, I operated on a case which illustrates clearly the lack of judgment of the dentist who filled a cavity over a septic pulp. The patient had the inferior left first molar filled with amalgam, from which the pulp had not been removed. The day following this filling the jaw around the tooth became sore and the face swollen. This condition continued to increase for several days. For two or more weeks she suffered much pain, when the swelling gradually diminished, leaving an indurated tumor near the apex of the roots, which continued to increase in firmness and constantly distressed the patient. At times the pain was quite severe. From the first of the trouble the patient was advised by the dentist to have nothing done with the tooth, as it was not at fault, while the physician and others advised its extraction. Two years later the patient consulted another dentist, who extracted the tooth, and found it in the condition as heretofore stated. This, however, did not check the growth of the tumor, which gradually increased in size until the face was considerably deformed. I was able to enucleate the tumor, and from its size could readily understand that the jaw-bone was nearly severed, there being not more than a quarter of an inch of the inferior border remaining, so completely had the growth of the tumor destroyed it. The tumor was osseous. The operation was done from within the mouth, thus avoiding the usual scarring, so disfiguring when the opening is made through the face. The case had been diagnosed a ''sarcoma'' and removal of half of the lower jaw was advised.—*Dominion Dental Jour., Oct. 1897.*

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SUCCESSFUL METHOD OF FILLING FAST DECAYING TEETH OF THE YOUNG AND ANEMIC. By C. Bunting Colson, D.D.S., Charleston, S. C. Read before White Mountain Meeting, July, 1897. It is my belief that we are on the eve of discovering a specific which will prevent disintegration of the teeth of the young and of those in poor health, other than by the merely mechanical and prophylactic measures of to-day. Before explaining my own methods of procedure, I will discuss briefly some of the processes and materials which have given us particularly satisfactory results in the mouths of the young and anemic, and especially of nursing mothers. The most useful materials, here named in the order of their usefulness, have been soft gold, gutta-percha, tin, lead, cohesive gold, oxyphosphate of zinc and oxychlorid of zinc. The various processes upon which we have depended have been fillings with one or more of the above materials; cleansing or polishing of the enamel; or completely surrounding the teeth with metal as with a band or crown, thus protecting them from the secretions of the mouth. Therapeutically we have advocated prophylaxis by friction with the brush, silk, mouth lotions and dentifrices, and cauterizing with nitrate of silver of surfaces preventing superficial caries.

In which direction shall the dental student of the future seek for that specific which shall be to dentistry what Jenner, Pasteur, Koch, Roux and others have given to the general practitioners of medicine? Preventive dentistry may eventually rely upon a process; certainly not upon any particular filling material. It might be possible to permanently preserve human teeth if a method could be discovered by which we could electrically deposit gold, silver, nickel or platinum over all the surface of the teeth of the young, preventing by such deposit caries in fissures, and the attacks of microorganisms; but as we can scarcely hope for this, and as filling materials can only retard and partially prevent further progress of rapid decay, and as such disintegration is pathological, our future dependence must be upon therapeusis.

It has long been noted that pure soft gold apparently acts better than any other material used in preventing subsequent disintegration of the teeth filled, even where the manipulation has been faulty. It is not uncommon to find a leaking or loose gold filling of soft gold remaining in a tooth for years and preserving it, which would seem to prove that its action depends upon some therapeutic property and is not due to perfect adaptation. This cannot be said of cohesive gold.

We have similar preservative properties in tin and lead, but it is not always wise to use these materials in the teeth of the young because of the discoloration which they frequently cause. Copper amalgam has given good results under certain conditions, of which, however, as yet we know too little to be able to utilize this material, which the lack of knowledge as to when and where to use it renders most unreliable.

We have fairly good results from gutta-percha as a temporary expedient, and here again we have an action which is apparently therapeutical rather than mechanical. When well manipulated, gutta-percha often serves a permanent purpose, and even when poorly placed frequently gives better results than could be obtained with any other material.

Therapeutics has furnished us with some good preparations for the prophylaxis of the mouth, but none are specific, and the mouth being an ever washed cavity, the effect of the most powerful agent is soon lost. In many mouths the teeth are covered with a viscid, thick, clinging deposit, not very soluble and not easily removed, and which is not penetrated by any ordinary or even extraordinary germicide or antiseptic. Wash a child's mouth with the most potent of these agents yet known, and we still find under the felt-like pads an abundance of thread-like bacteria.

We have several mechanical processes which are valuable in combating the early stages of decay. When first detected, if we thoroughly cleanse the surface and polish the enamel with hardwood polishers, we are frequently able to abort the process of decay. We also have a reliable agent in nitrate of silver, especially for deciduous teeth, where it is of great advantage in retarding the progress of disintegration of the enamel, and, except that it leaves a coal-black stain, it would be exceedingly valuable in dentistry.

I will now briefly describe my method of preserving rapidly decaying teeth in the mouths of patients between the ages of ten and twenty, and also in young mothers and anemics. We find similar conditions in nearly all these cases, except that in children we have a larger pulp cavity and less dentin between filling and pulp. Many years ago I became impressed with the idea that the enamel and dentin may be affected far beyond the point usually reached with our excavators. I was forced to this conclusion by observing the recurrence of decay around and beneath fillings. I have frequently cut away more tooth substance than is usual and obtained success, though I have occasionally lost a pulp from the proximity of the filling to that organ, even when care had been taken to line the cavity. I have also found that in many of these cases in the course of time the vitality of the pulps became impaired, the pulps eventually dying. I therefore became convinced that it was not altogether the proximity of the cement lining nor of the gold which caused this, but rather the infected condition of the dentin between the filling and the pulp, and I have proven the correctness of this theory by obtaining good results through proper treatment prior to filling. Having satisfied myself that the dentin of decayed teeth is affected more deeply than is usually believed, I became assured that soft gold would be the best material for preserving the teeth and preventing subsequent recurrences of decay.

My present method of filling rapidly decaying teeth is as follows: I demand sufficient space in which to work. If the cavities are in approximal surfaces, I open by packing cotton, cork, or sometimes rubber, and then keep the teeth apart with a peg of wood until the soreness leaves. With the rubber-dam adjusted and the cavity well dried, I attack the enamel edges with a very sharp chisel or excavator, but prefer to use a small, fine cut fissure drill or bur. I cut back the enamel well before I proceed to excavate the cavity. I excavate the dentin with sharp excavators, using only hand instruments, as they are better controlled, and less painful if sharp. After as thorough an excavation as judgment will permit, we are frequently compelled to leave a small pad of decay at the bottom of the cavity for fear of exposing the pulp. Believing that the apparently normal dentin and enamel are not so healthy as they seem, of course it is not satisfactory to leave this pad of decay, which is composed of particles of brokendown dentin, microorganisms and other septic material absorbed from the saliva; nevertheless, we are forced to do so. To fill over it with any material without first taking necessary precautions would be fatal to the success of the permanent filling. It is the bacteria thus left within the cavity which destroy many teeth, however carefully lined and filled.

After excavating, my next step is to dry out the cavity with warm air—and I frequently do this while excavating as it reduces pain to a minimum—which should be a slow stream of air not hot, but just warm enough to drive back the serum and evaporate the contents of the tubuli to some extent. I then bathe the cavity with a drop of a caustic soda solution which is instantly sucked up by the dry tubuli. The soda penetrates the tissues of the tooth to a considerable depth, neutralizing all the acid that may be present in the tooth itself or in the pad of decay. Again drying this out and applying warm air as before, I flood the cavity with oil of cloves. Why oil of cloves? I have tried nearly all the germicides that I felt justified in experimenting with, and I find that oil of cloves is the most suitable and efficient. After absorbing out the surplus with bibulous paper I again apply warm air. Oil of cloves has the peculiar property, when heated to the point of volatility, of penetrating, and will pass deeply into the tubuli and so embalm the substance of the pad that no fermentative action can occur.

Now I return to the enamel border. Treatment of this margin is the most important of the entire process of filling this class of teeth. I employ some original instruments made of carborundum pencils ground down and pointed so that they resemble a well-sharpened lead pencil. I have these of fine grit and placed in porte polishers. With these fine points I grind my enamel well around to the full extent of the diameter of the cavity, so that there shall be no overhang to any portion near the surface. I now trim the extreme outer edge of the enamel, surrounding the cavity to the outer bevel or counter-sink, similar to that which is made in flushing a screw head in cabinet work, but not at so acute an angle. All this is done with the small carborundum pencil points. Then I line cavity with balsam, believing that I seal within the tubuli sufficient essential oil to prevent the development of any fermentative decomposition in the pad. While the balsam is drying I polish my beveled enamel border.

I desire to make a few remarks on polishing enamel, because the practice does not seem to be so generally appreciated as it was twenty years ago. It was formerly the common practice in the treatment of superficial decay, after removing the roughened surface, to polish the enamel carefully, and I have always been impressed with the ability of these fresh surfaces to resist the attacks of the agents of decay, which seem to prefer a roughened enamel surface. When we find decay to be general throughout a mouth, we invariably may note that the enamel surfaces are far from having that high polish which we see in a healthy mouth; therefore, I think it very essential to perfectly polish these enamel borders. I use for this purpose points of hardwood, mostly seasoned hickory and boxwood sharpened like pencils, held in the porte polisher bits. Running my engine at a rapid speed, I polish the beveled enamel borders of my cavity until my mouth-mirror shows me that they shine and reflect light. This is not difficult nor painful, nor does it require much time, but it is very necessary to a perfect operation.

Bear in mind that I am writing of teeth in which we may expect a recurrence of decay. In such cases I ordinarily use a cement lining, especially in very young mouths, to avoid the necessity of placing gold in contact with the dentin, but this must be done with judgment and depends upon the depth of the cavity. If I use cement I anchor in it several pellets of cohesive gold as a foundation, in preference to deep anchorages, but I do not fill the entire cavity with cohesive gold. When I have the cavity about two-thirds filled I place around, as I work, little pellets of pure soft gold about No. 4, folded from four to six times. These I lay along the enamel borders, and they are held in place by the cohesive gold as it is built over them until I have all the enamel edges of the cavity overlaid by these soft gold pads beyond the bevel. I then complete the filling with cohesive gold and burnish thoroughly.

It may be asked, why not fill with soft gold entirely? The answer is that soft gold fillings to be well inserted require much pressure and malleting. The enamel of the teeth of the young is not dense enough to resist such pressure. Again, I cannot finish to a certainty to the outer edge of the bevel of the enamel with soft gold, and I also wish to restore the approximal relations of the teeth by contouring. Nevertheless, I want soft gold on the beveled polished edges, covered by cohesive gold well burnished down, and I have no fear of bacteria destroying the tooth so polished. A few children may not have the patience or endurance to submit to this method, though rarely am I obliged to adopt any other.

My next favorite filling is gutta-percha, and I prefer the common pink base plate gutta-percha to any of the white preparations, and I use it whenever I can, where its color does not make it objectionable. To fill teeth with gutta-percha, especially in the mouths of small children, is an art and requires as expert a hand as any gold filling, and, although it can be done much more quickly, is difficult. In the posterior teeth I always use it below the gum margin and almost invariably touch the bottom of the cavity, be it enamel, cementum or dentin, with a crystal of silver nitrate, and then insert the gutta-percha. In this manner I have saved teeth which, without the use of the silver nitrate, could not have been certainly preserved.—*Items of Interest, Sept. 1897.*

CORRECTION OF CLEFT PALATE. By William A. Bryant, M. D., D. D. S., San Francisco. Read before Pacific Coast Dental Congress, July 13, 1897. The subject I bring before you to-day is one which receives too little attention by our profession—namely, the correction of cleft palate. This most distressing deformity, interfering as it does with mastication, speech and deglutition, is varied in its extent. The causes of this malady may be classified as congenital, acquired and accidental.

Firstly. The congenital cleft is due to the imperfect closure of the fœtal gap existing between the nasal and the buccal cavities. Many writers ascribe this deformity to different causes, but the theory which has the greatest number of supporters is that of heredity. Malnutrition, scrofula, prenatal impressions and locality are all given as causes. The fissure caused by this non-closure may be varied in its extent. From the simple division of the uvula, the velum may be divided, or the cleft may extend through the palatal plates of the superior maxilla until it reaches the os incisivum, when it deviates either to the right or left side, following the suture between the os incisivum and the maxillary bones, forming a complete cleft. Thus it is exceedingly rare that a cleft is found directly in the median line; it more generally passes to the left. An accompanying evil which is found in conjunction with cleft palate is harelip, or a continuation of the cleft through the soft parts into the nostril. Harelip may be present without cleft palate, but it is exceedingly rare that a complete cleft of the palate exists unaccompanied by harelip. If the failure to close the gap be on both sides alike, double harelip is the result. In many cases the nasal cavity is entirely exposed, the floor being destroyed, and the turbinated bones deformed or only stumps showing their location. The irregularity of the arch is due to the advanced formation of one side and lack of development of the other; thus we very often find an irregular arch with a different elevation of the two sides.

Secondly. The acquired form is due to diseases, and varies greatly in the extent of territory involved. Syphilis and cancer in its various forms being the chief causes.

Thirdly. Under the head of accidental we can place those caused by gunshot, knife and all other causes from violence.

The operative procedure dates as far back as 1764, when Le Monnier, a French dentist, first performed this operation by trimming the edges of the retracted soft palate and drew them together by sutures, thus overcoming the division in the soft palate. He then made a metallic plate, clasped firmly to the teeth to close the cleft in the hard palate. The operations of Drs. Roux, Pollock, Græfe and others are all more or less modifications of this same procedure. Dr. Warren, in conjunction with the operation upon the velum, raised the periosteum, and trimming the edges of the mucous membrane, closed the gap in this manner.

Dr. Truman W. Brophy's method is the most satisfactory where the case comes under professional supervision in early childhood. Briefly, his method is the contraction of the arch by drawing the two sides with their pared edges together with silver wire, using a lead button molded to fit the convexity of the superior maxillary bones on both sides. These plates have holes drilled, through which the silver wires pass, two on either side; the two wires on the same side are twisted, thus approximating the pared edges of the two halves.

In adult cases this application would not be applicable, and it is to these cases that I would draw your attention. We have within our means the power to do with mechanical contrivances the same good in rectifying the mistake of nature as the surgeon with his skill, and with far less discomfort and pain. Through our attempt at correction no evil aftereffects can follow, and if no improvement is noted with our first effort, the second may be crowned with success. Too much is at once expected by the patient as regards the improvement in speech, and great care should be exercised to have it fully understood that the articulation must be learned, especially lingual and palatal sounds. In the dental correction of cleft palate by the use of obturators to close the opening in the palate, or, as they might be more properly called, artificial palates or vela, ivory, gold, silver and vulcanite have been successfully used. These have mostly been supplanted by vulcanizable soft rubber.

To more clearly explain the methods which follow, allow me to present the case of Mr. S., a patient, thirty-two years of age, with congenital cleft and harelip to the left of the median line, extending fully into the nasal cavity. The vomer had a slight attachment to the left palatal process. Patient was first operated upon for the removal of harelip, and a periosteal flap was formed on right and left sides, with the mucous membrane edges in a line with the cuspids.

Central and lateral incisors missing. Three weeks following he returned. After first cleansing the nasal cavities and mouth of all mucous discharges with a three-per-cent solution of pyrozone, mixed with equal parts of euthymol, I then spray with a five-per-cent solution of cocain, to allay the sensitiveness, allowing five minutes to elapse before taking the impression. Mix the plaster pretty stiff and carry it well up in the nasal cavity. While still soft introduce a long screw into the center of your plaster, to act as a handle with which to withdraw the impress, after allowing it to harden thoroughly. When removed, unscrew the handpiece, trim the roughened external surface, and cut two or more cone-shaped depressions. Place your impress in hot oil and allow it to soak for a few minutes, remove, drain, and replace in the mouth, taking great care to have it occupy its true position in the nasal cavity. Proceed then to take an impression of the hard palate as you ordinarily would for artificial dentures, but using your plaster thinner, as the palatii muscles are apt to draw away if any pressure is brought to bear upon them. A good plan I have found to avoid the semi-fluid plaster running down the throat is to extend the impression cup with sheet gutta-percha, the edge having an upward turn like a saucer. After filling your cup thus formed, slightly warm the edges of the gutta-percha and carry directly back to the pharynx. Force your plaster forward and upward. Do not attempt to remove the impression until the plaster is firmly set. It is always best to have two impressions. Compare carefully with the mouth and select the one where the lines of the palatii muscles are most clearly defined. Replace the halves of your impression, coat with varnish and make a cast of the nasal portion up to a plane of the true palatine surface. Trim, cut your guides, oil and make the cast of the palate and teeth. By thus having your cast in two portions you have a better opportunity to manipulate the modeling material for the nasal cavity and an independent cast of the palatal portion and teeth. The next step is forming the model for the velum and destroyed tissues. The rule to be followed, and one which will suit all cases, is to make your model resemble as nearly as you can the tissues which nature has failed to provide. Care must be taken to avoid any passage of air between the closed palatal portion and the nasal cavity. By using sheet gutta-percha, and building upon this with wax, a very true model may be had.

Try the model thus formed in the mouth, and after convincing yourself that the edges are close to the palatii muscles and the approximating surfaces well-formed, proceed to flask your case the same as in vulcanizable hard-rubber cases. Extreme care must be exercised in selecting the plaster for this work. Avoid the formation of air bubbles. After thoroughly boiling out the wax and removing the gutta-percha, wipe dry and coat the surface in contact with the rubber with finely powdered plumbago, rubbing it well into the texture of the plaster until a glistening surface results. Make your vents clean cut and posteriorly. Prepare now to pack the flask, which has been previously well baked in an oven. Vulcanizable soft rubber proves most satisfactory. To give increased durability to the hinge of the velum to the plate, imbed in the substance of the soft rubber small platina-gold springs, 35 gauge, ⅛ of an inch in width and about 2 to 2½ inches in length, perforated at both ends. The vulcanizable soft rubber is best manipulated by heating to 230 degrees and then slowly advancing until 270 degrees is reached, retaining that degree for five hours. Cool and remove from the flask.

We have now an opportunity to try our work in the mouth, and if any roughness or undue pressure is found cut it away. In using knife or razor to accomplish this an irregular surface is unavoidably the result. This difficulty may be overcome by using a thermocautery and burning away the irregularities, leaving a smooth surface, non-irritating to the sensitive mucous membrane upon which it impinges.

Before taking the impression for the plate, burn two cone-shaped holes in the obturator on the external surface, to act as guide-posts in connecting the soft and hard plates together. Place the obturator carefully in its true position and take impression of the mouth for the vulcanite plate in the usual manner. Make the clasps strong and wide. Directly over the two points indicating the burnt depressions in the obturator place a piece of 18-k. plate with well serrated edges. Vulcanize.

When the hard-palate plate is finished, drill two holes through the gold plate, passing in a line with the cone-shaped elevated points. Through these are passed the bolts that secure the soft and hard portion of the artificial palate together. Make an incision with an oiled razor in the upper ridge of the nasal portion of the vulcanizable rubber, drill two holes through in relative position to the bolts. These holes may be enlarged with red-hot wire. Pass your bolts through the holes, retract the cut edges, screw down the nuts of the bolts upon small washers, and your plate is complete.

The gagging sensation, an unavoidable accompaniment, due to introduction of the foreign velum, is very readily overcome by using a gargle of euthymol, one part in five of water. Absolute cleanliness should be enforced upon patient, a disinfectant wash used, and plate soaked at night.—*Pacific Stom. Gazette, Oct. 1897.*

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NOTES ON VARIOUS FORMS OF THE ARTICULATION OF THE UPPER AND LOWER TEETH. By J. E. Grevers, Amsterdam. Read before Odontological Society of Great Britain. Having entered upon an investigation into the anatomical changes in certain deformed upper jaws, and not finding sufficient material in the anatomical museum of Amsterdam, I visited those of Vienna and Paris and their museums of anthropology, and it was while looking over their extensive cranial collections that the question of the occlusion of the teeth was forcibly put before me. A certain deformity which specially interests me at present is also marked by a certain abnormality in the occlusion of both upper and lower teeth, and in searching for examples of this it was but natural that other variations than the one I was looking for would come under my observation.

Variations in dental occlusion were frequently met with and to even a superficial observer it became evident that all the variations could be reduced to a limited number of groups. In looking over the dental handbooks, I found almost all of the varieties more or less fully described, but there seemed to exist an uncertainty in their nomenclature which might cause confusion, and I felt once more the urgent need of a terminology which would be definite, concise and, if possible, universally applicable. An attempt in this direction had been made by Carabelli in 1844. In his "Systematic Handbook of Dental Surgery" we find an attempt towards a universal nomenclature; and again, in 1891 we find another by Sternfield in the first volume of Scheff's "Handbook of Dentistry." Both these classifications I have applied and compared their usefulness.

Carabelli divides the variations into six groups: I. Mordex normalis = normal bite. II. Mordex rectus = edge to edge bite. III.

Mordex apertus = open bite. IV. Mordex prorsus = prominent bite. V. Mordex retrorsus = short or reverse bite. VI. Mordex tortuosus = cross bite.

At first glance this classification would seem to meet all requirements, but on closer observation and on comparing one group with another this nomenclature proved to be unsatisfactory and in some cases worthless. For instance, under the fourth group (mordex prorsus), Carabelli ranges a prominence of the upper jaw and also a prominence of the lower teeth, not combined—but each separate conditions of things which cannot be said to be similar. The next group (V. Mordex retrorsus) is in one sense complemental to the preceding and on the other hand opposite to it. We find in this group collected cases which are called edge to edge bite and cases of projecting lower jaw.

In the article in Scheff's Handbook Sternfeld introduces a nomenclature which has for its basis certain expressions which are used in anthropology. He recognizes two classes of dental occlusion, a physiological or ethnological and a pathological. The first or ethnological comprises the following sub-forms: I. Orthognathia dentalis = normal bite. II. Prognathia dentalis = prominence of both upper and lower jaw. Prognathism. III. Orthognathia dentalis = edge to edge bite (as Egypt Celt). IV. Progenia dentalis = slightly underhung, projecting lower jaw (as Frisians). The second or pathological class is subdivided into: I. Orthognathia pathologica dentalis. II. Prognathia pathologica dentalis = undue prominence of the upper jaw. III. Orthogenia pathologica dentalis. (Both forms not described.) IV. Progenia pathologica dentalis = undue prominence of the lower jaw, underhung. V. Opisthognathia pathologica dentalis = retreating upper jaw. VI. Opisthogenia pathologica dentalis = retreating lower jaw.

When the abnormality is limited to the upper jaw the suffix '*gnathia* is used and '*genia* to the lower jaw. The prefixes *ortho*—*opistho*—*pro*(*s*)—express the position of the teeth, whether straight, backward or forward. It seems to me to be very questionable if not objectionable to make use of terms which in another branch of science possess definite meanings, and to apply them differently to special and pathological cases. Both clearness and definiteness of expression must suffer from this. We find a striking example in Sternfeld's classification, sub. II. In his *prognathia ethnologica* we learn that both upper and lower jaws are prominent (prognathism), and in this he is in conformity with the teachings of anthropology. It appears to be quite clear, and he acknowledges this—*vide* II. Prognathia ethnologica—that by prognathism is generally understood the projection of both upper and lower jaw with a normal dental occlusion such as we see typified in the lower races.

To apply the term prognathia—even with a restriction such as pathologica—to instances of projecting upper jaws only seems to me illogical and misleading. The terms—pro-, ortho-, opisthogenia, however enticing, appear to me to be no less objectionable, for at the present day anthropologists are still far from being unanimous as to the meaning of these terms. The term *progenia* originated with L. Meyer, who had found among the inmates of insane asylums typical cases of projecting lower jaws, which to him were pathognomonic. In studying this little paper of Meyer, and in looking over the drawing which he gives of his crania progenia, it seems to me that his description does not tally with the picture and leaves some doubt as to the real meaning of the word. This uncertainty becomes stronger when we read Virchow's contribution and there find depicted what he considers to be progenia. But a projecting lower jaw certainly cannot be considered to be pathognomonic for imbecility; this condition of the lower jaw is also met with in otherwise perfectly sound persons.

In 1881, Iszlay, of Budapest, proposed a new nomenclature, which seemed to me to be not only a correct one, but also to be perfectly logical and highly practical. To do away with the misnomer articulation of the teeth, Iszlay substitutes the word *odontharmosis*. To determine the variations in odontharmosis, it is desirable to find some fixed or quasi-fixed point, and for this Iszlay has selected the upper jaw. According to the position of the lower teeth we have the following possibilities in odontharmosis. I. Enarmosis = projecting upper teeth, normal bite. II. Epharmosis = projecting lower teeth, underhung bite. III. Prosharmosis = edge to edge bite. IV. Opharmosis = open bite. V. Dicharmosis = cross bite. VI. Tyrpharmosis = mixed up bite.

Sub. I. Enarmosis. The upper teeth fall just in front of the lower ones, leaving hardly any space between the labial surface of the lower and lingual of the upper teeth, thereby covering the lower teeth but for a small distance. This condition may be called eu-enarmosis. Supposing the same condition to exist, with this difference, that the space between the upper and lower teeth is much larger—projection of the upper jaw—then we have still an enarmosis, the upper teeth biting completely in front of the lower teeth, but no more a eu-enarmosis (normal bite). Here we place the prefix dia to enarmosis and call this condition a di-enarmosis. This projection of the upper jaw may amount to a few millimetres or more. Still another form of enarmosis may present itself, *i. e.*, the upper teeth may cover the labial surface of the lower ones entirely, and these again strike hard against the palate. This condition is said to be dysenarmotic—dys-enarmosis. Again, it is possible that a combination of the two last mentioned sub-forms of enarmosis may be met with; *e. g.*, strong projection of the upper teeth, with deep occlusion of the lower ones against the hard palate; such a case can be perfectly and at the same time clearly described as dys-dienarmotic. Everybody may at once understand what is meant.

In the next group (II. Epharmosis) we have just the reverse of the first group. Here the lower teeth come in front of the upper. Here, also, three possibilities may present themselves. We may have an eu-epharmosis, that is to say, (1) the lower teeth will touch the upper ones, leaving no space between them; (2) a di-epharmosis, the space is much greater, but the upper are not entirely covered over by the lower teeth, and (3) a dys-epharmosis, the lower ones cover the upper teeth entirely, leaving very little space between. A combination, dys-di-epharmosis, is possible.

The third group, Prosharmosis, comprises those cases in which the upper and lower teeth meet edge to edge.

The fourth group, Opharmosis, includes those cases in which, on closure of the teeth, the molars and bicuspids meet, but a greater or less open space is left between the front teeth.

We sometimes encounter instances in which the odontharmosis is such that the upper row of teeth meets the lower one crossways; for instance, on one side the teeth stand enarmotic, and on the other side pros—or epharmotic; or on the other hand, the lower jaw may be responsible for the deviation. This is called dicharmosis or crossbite. Fifth group.

In the last group (VI.) are taken up those cases which cannot be classified under any of the preceding groups, the odontharmosis being so mixed up that almost every tooth has a different kind of malposition. Under this head may be arranged certain cases of complicated irregularity.

It might be objected that in this classification no regard has been given to the etiology of the various forms of odontharmosis. This I believe to be no serious objection to the system. For instance, a di-enarmosis may be due to a contraction of the upper jaw or to an eversion of the teeth, and if the etiology is known it may be appended, *e. g.*, di-enarmosis ex contractione maxillæ superioris, and so on? Another objection may be raised against this system of classification, in that there is no room for certain "pictorial" expressions, as senile mouth, in which the teeth of the upper and lower jaw are inverted ; but this does not detract from its value, and in these cases the odontharmosis may just as well be enarmotic or prosharmotic, if not epharmotic.—*Brit. Jour. Dent. Sc., Oct. 1897.*

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ORAL SURGERY. By Edmund W. Roughton, B. S., M. D. (Lond.), F.R.C.S. Eng. Diseases of the Glands. *Tumors of the parotid* are not uncommon, and several varieties are met with; but there is one tumor so much more common than the rest, that it is known as the "parotid tumor." It is composed partly of connective tissue and partly of epithelial elements. The connective tissue is partly fibrous, partly myxomatous, and partly sarcomatous. Nodules of hyaline cartilage are often interspersed throughout the tumor. The sarcomatous elements vary in amount and in kind; sometimes there are none, sometimes the cells are few and spindle shaped, sometimes they are more numerous and oval or round in shape. The epithelial elements bear a more or less close resemblance to the normal glandular structure. Cysts are not uncommon and result from liquefaction of the myxomatous tissue of the tumor.

The clinical characters of the tumor vary somewhat. When small they are firm and somewhat elastic to the touch, smooth or somewhat lobulated on the surface or rounded outline and freely movable. As they increase in size they project from the side of the face, forming a swelling as large as an orange or even larger. The deeper part of the growth often passes under the jaw and projects into the pharynx or fauces and comes into relation with the styloid process and its muscles, the carotid vessels and the large nerves in the neighborhood. The surface of the larger tumors is usually markedly lobulated and unequal in hardness; in places it is as hard as cartilage, whilst in other parts it may be quite soft or fluctuating. The rapidity of growth varies greatly; as a rule they grow slowly and may take years to reach the size of a walnut, but at any time they may take on active growth and double their size in a few months.

In addition to the ordinary parotid tumor just described, *fibromata*, *myxomata*, and *enchondromata* are also met with in the parotid.

Spindle-celled and round-celled sarcomata are occasionally met with in this region, springing either from the gland itself or from the neighboring bones or fasciæ. They grow rapidly, soon implicating surrounding parts and often presenting in the pharynx.

Carcinomata of the parotid are fairly common. They are usually of the soft variety (encephaloid), but sometimes scirrhus cancer is met with. These tumors grow very rapidly, are deep-seated and fixed, and very soon involve the skin, which becomes brawny and of a reddish purple color.

Diagnosis. The most important point is to distinguish between an innocent and a malignant tumor of the parotid. The simple tumor is of slow growth, well-defined, movable, and does not involve the skin, whereas the malignant tumor is of rapid growth, ill-defined, fixed, and soon involves the skin. The only swelling likely to be confounded with a parotid tumor is a chronic enlargement of the lymphatic gland situated just in front of the neck of the lower jaw. Sometimes the diagnosis is very difficult, but the greater fixity of the gland, the presence of tenderness, and the enlargement of other lymphatic glands will usually suffice to discriminate the lymphatic gland from the parotid tumor.

Treatment. The treatment of tumors of the parotid consists in extirpation with the knife. As a rule no operation should be attempted for the removal of a malignant parotid growth, as nothing short of completely extirpating the whole gland (a difficult and dangerous operation) is of any avail, and recurrence within a very short time is almost certain. In removing innocent tumors great care should be taken that no lobule or outlying portion is allowed to remain. The skin incision should be made vertically over the tumor and of sufficient length to fairly expose the whole mass. The deeper dissection should be carried on from below upwards, or from behind forwards, so that one division of the blood-vessels may suffice. The facial nerve must be spared as much as possible by working parallel to its branches; a certain amount of facial paralysis is very common after removal of deeply seated parotid tumors.

Diseases of the Submaxillary Glands. The commonest cause of enlargement of the submaxillary gland is obstruction of its duct by a calculus. Tumors of the submaxillary glands are very rare. I have on one occasion removed a small tumor from this situation which exactly resembled in microscopic character the ordinary "parotid" tumor.—*Brit. Jour. Dent. Sc., Oct. 1897.*

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UROTROPIN. The favorable reports that have come to my notice regarding urotropin lead me to think that some additional facts concerning it may not be amiss. Urotropin is a derivative of formic aldehyd, and not a coal-tar product. The well-known antiseptic and preservative power of formic aldehyd in solution led Nicolaier, of Gottingen, to use the solution of formic aldehyd, containing forty per cent of the gas, and known as formalin, as a means of preserving specimens of urine from decomposition pending examination. He noticed that neither uric acid nor the amorphous urates were deposited, though the same specimens not treated with formalin deposited either or both, as the case might be. Even when already precipitated these substances underwent solution when formic aldehyd was added to the specimen. Urines that readily deposited large amounts of uric acid when acidulated with a mineral acid did not do so when a sufficient amount of the preservative was added.

The results of these investigations prove very conclusively the great uric acid solvent power of formalin. The reputation of the lithium salts as uric acid solvents is caused by the common error of applying the results of laboratory experiments to practical therapeutics. The fact that lithium forms an insoluble phosphate, and that the blood and urine contain considerable amounts of soluble phosphates, show that lithium salts, given by the mouth, must form insoluble phosphates of lithium long before they can combine with the uric acid. In this respect it is no exception to the chemical law that when the ingredients for the formation of an insoluble body are present in a mixture this body will always be formed. Medical opinion has for a long time attributed the success attending the use of the lithiated waters to the water and not to the lithium that they contain. A similar error obtains in the case of some more recently introduced substances, lycetol, lysidin, etc. They do not, in the urine, form the very soluble uric acid combinations that they do outside the body. Formic aldehyd being too irritating to be taken internally, Nicolaier then determined to try its amine combination as a substitute. This substance, hexamethylen-tetramin or urotropin is non-poisonous even in considerable quantities, is unirritating, very soluble in water, and is as good a uric acid solvent as formic aldehyd itself.

The name urotropin was given to it on account of the changes which its administration brought about in the urine. Alkalin and putrid urines, containing mucus in excess, pus and pus organisms, uric acid or amorphous urates, were rapidly restored to a normal appearance and an acid reaction. The urine was sterilized and increased in quantity, and calculi and deposits were dissolved. Hence urotropin is a most valuable resource in all suppurations of the urinary tract, and in all gouty and rheumatic conditions where an active eliminant of uric acid and its salts is indicated. A further valuable property of urotropin is its faculty of combining readily with salicylic acid and forming a soluble combination. A solution containing from ten to fifteen grains each of urotropin and salicylic acid to the fluid ounce of water, or other suitable vehicle, has the further advantage over the salicylates alone in that its taste is not disagreeable. It appears to be far less irritant to the gastric mucous membrane than solutions of salicylic acid usually are, and the combination promises to have a wide range of therapeutic usefulness.—J. A. Flexner, M.D., *American Practitioner and News.*

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PROMINENT CAUSES OF FAILURE IN THE USE OF ELECTRICITY IN DENTISTRY. By C. S. Neiswanger, M.D., Chicago. Read before Southern Dental Association, Old Point Comfort, August, 1897. Electricity is a natural phenomenon, and the only way to accomplish results, either physical or therapeutical, is to observe closely and try to interpret the language in which nature speaks to us. Electricity is closely related with some other forces with which we think we are familiar. It is but a mode of motion or other manifestation of a form of matter called the ether, which permeates all bodies and pervades all known space.

Light is only a transverse vibration of this same ether, with infinitessimally short wave lengths. Heat and sound are made apparent to us by the aid of longer waves of the same medium. Electricity is governed by laws which are as well known as those which regulate light, heat, sound and gravitation, all elucidated by mathematical process. All animal and vegetable life being due to and dependent upon the electrical conditions surrounding it, is it not reasonable to suppose we should be able to restore the equilibrium (health) of the body by supplying electricity from an outside source?

To comprehend the subject of electricity there are three fundamental principles which must be observed: First. *Voltage.* This is not electricity itself but the force which impels it—push-power—produced by a difference of electric level. Second. This voltage or difference of electric level is caused (if we are doing cataphoric work with a battery of cells) by the difference of potential between the two elements within the cells. If two pieces of metal are immersed in an acid or other existing fluid, one of which is acted upon by the acid much more readily than the other, the voltage will be in proportion to the difference with which the two metals are acted upon by the fluid. Two metals having a great difference of potential will give a high voltage or push-power. Third. Amperage is electricity or current; it must not be confounded with voltage. We may represent this by a rain; the water represents the amperage, the swiftness with which it flows the voltage; hence as we may have a broad river flowing slowly, or a narrow stream running swiftly, so we may have high amperage and low voltage, or vice versa.

There are three factors in the causes of failure in this class of work: (1) The battery. (2) The controlling device. (3) The manipulation of the electrodes.

(1) The galvanic current—the direct or continuous current generally utilized in dentistry—is produced by chemical decomposition; the conversion of chemical energy into electric energy. If we would generate electric energy sufficient for our purpose, we must have a corresponding consumption of the fuel that keeps up the chemical decomposition, and this fuel must be renewed as required. Hence the failures of those who are seduced by the attractive advertisements of those who furnish a battery of a few cells as large as a man's finger guaranteed to do heavy work for years. In dentistry we have a heavy resistance to the passage of the current to overcome, and as it is the current or amperage that does the work, we must have sufficient voltage or push-power in our battery to overcome this resistance.

(2) The controlling device should be capable of controlling the current in absolutely gradual gradations, and not by steps, or cell by cell, as this would cause very great pain in a hypersensitive cavity. An instrument in which the resistance is composed of german silver will, for instance, be objectionable, because the passage of electricity generates heat, and when the wire is heated resistance is increased and the current drops back and has to be reestablished by a forward movement of the instrument. This is a very prominent cause of failure not heretofore recognized. With the wire rheostat there is a constant fluctuation of the current backwards and forwards.

The term "volt selecter" means nothing. A volt selecter is a current controller, and the more voltage or pressure you have the more current is pushed through the resistance we encounter. It is the amount of current that does the work, and a milliamperemeter is the proper thing to have in the circuit that we may know how much current is passing through. Although the amount of current necessary in any certain case has never been definitely determined, it is a satisfaction to see the indicator upon the meter move and to know that the patient gets just what is indicated upon its face.

Let the battery have at least a pressure of forty or sixty volts. Less may do some of the work, but you have a reserve force for other cases. Your current controller should increase and decrease the resistance gradually and not by steps. It should be of graphite or carbon, with the patient in shunt. The electrode should be supported and controlled by the hand. A good meter with range of scale to five or more milliamperes, graduated in one-tenth milliampere divisions, should be in the circuit. With such apparatus, and by paying due regard to polarity and the electro-sensibility of your patient, you will have no reason to regret the use of this valuable agent. If you have not the time to devote to it do not attempt its use. If you are not overburdened with practice there is no better way to increase it than by its judicious use.

Discussion. Dr. J. Rollo Knapp asked Prof. Neiswanger to explain why, in view of the decomposition and waste of the two metals used in the battery cells, there was not a corresponding waste in the two metals used as fillings in a tooth. Is the loss so very gradual that it is imperceptible? Dr. Neiswanger replied that it was probably because the two metals were not kept submerged.

Dr. Marshall said that Dr. S. B. Palmer had established the fact years ago, that there is a current between the two metals in a tooth until the surface is oxidized, as seen in the blackened surface of an amalgam filling.

Prof. Neiswanger spoke of the importance of knowing which pole to use in applying medicaments. If potassium iodid is used at the negative pole the iodin would act as an acid and seek the positive pole, the potassium remaining at the negative. On the other hand, if the potassium iodid was applied on the positive pole, the iodid would remain at the positive, and potassium, the metallic base, be carried to the negative and left in the tissues. If a copper needle is used for the positive pole the copper would be decomposed by the action of oxygen, the copper going to the other pole; and in this way it would almost equal bichlorid of mercury, besides being non-toxic. Solutions or compounds are always decomposed, the base remaining at the negative, provided there is sufficient current to effect the decomposition. With cotton and the alternating current you can produce a local anesthesia of the tooth, tetanizing the nerve through fatigue of the muscle.

Dr. John Marshall said that he had valuable results in that line, in relieving pain and reducing inflammations and congestions. No medicament is required, the current itself contracting the muscles of the blood-vessels and producing anemia of the parts.

Dr. Price spoke of the various theories as to the action in cataphoresis, and said: When all the various theories have been analyzed, we are forced to the conclusion that it is electrolysis, pure and simple, with perhaps some osmosis.—*Ohio Dental Journal, Oct. 1897.*

A DIFFERENTIATION.—A medical writer makes the following distinctions in defining illusion, hallucination and delusion:

1. An *illusion* is a false perception of a real sensorial impression.
2. An *hallucination* is a false perception without any material basis.
3. A *delusion* is a false belief; the patient accepts his false perceptions as facts.

FOLLICULAR TONSILITIS.—This is an acute infectious disease and should be treated as such. Whilst systemic treatment is of paramount importance, local treatment should not be neglected. Each crypt should be carefully cleansed with a strong solution of hydrogen dioxid, then applications made to each with solution of silver nitrate, forty or sixty grains to the ounce. Involvement of the pharyngeal or the lingual tonsil should receive similar treatment.—*Philadelphia Polyclinic.*

Letters.

CINCINNATI LETTER.

CINCINNATI, Nov. 16, 1897.

To the Editor of the Dental Digest,

MY DEAR MR. EDITOR:—At this writing it looks as though the Tri-State meeting (Ohio, Indiana and Michigan), which occurs in June, would be held at Put-in-Bay. This is what is called neutral ground and though it is Ohio's turn to entertain, the selection of Put-in-Bay will no doubt please everybody. The place is central as regards the three states and has not the distractions which are a necessary accompaniment of a large city. In this respect it is not unlike Niagara Falls, which has always been a good place for the American Association meetings, and if the dentists did not fill all the teeth of the Put-in-Bay natives at the last Northern Ohio meeting, there may also be a chance for a clinic. At any rate there is considerable interest manifested in the coming tri-state meeting and it is of the substantial, appropriation kind, which we regret to say is in marked contrast with the preparation for the former American association meetings. The committee say that all will be welcome, even if they come from Chicago.

The entire country is to be congratulated that the yellow-fever epidemic has been aborted by the cold weather and that the gates of the various southern cities are once more open for intercommunication. This epidemic has been more serious than northern people realize, and in other ways than as a thrombus in the arteries of commerce. For instance, at the outbreak of the fever a medical college of Memphis fled from its city, faculty, students, books and baggage, and took refuge in the quarters of a sister institution at Nashville.

We must realize that to thus transfer a body of students is an unusual and formidable undertaking. But the thought arises, how much more formidable would be the impromptu moving of a dental college. Imagine an army of two hundred dental engines, a hundred dental chairs, vulcanizers, furnaces and a car-load of text books. We are reminded that the equipment of a dental student is considerable and valuable. To illustrate: It is found that the dental depots of a college city receive from the students for their instruments a sum about equal to that received by the dental college in fees, and (to continue the statistics) that the expenses of a course for the degree in dentistry are about equally divided among the instruments and books, the board and lodging, and the college fees; that is, for each about $350 or $1,000 in all; and further it is found that in Cincinnati, which has each October an influx of several thousand students to its schools, professional and non-professional, no student expends and leaves in the city so great a sum of money as does the dental student.

But to return to the yellow-fever question. Our local health officer remarks that the sum of money lost to the country this year as a result of the yellow fever would have been more than enough to have established and maintained for several years a department of public health at Washington with its proper cabinet officer, which department could probably have averted the epidemic. And such a department would have, of course, its officer of dental surgery, or would it?

An open letter from Dr. Arrington, in the November *International Journal*, intimates that the usefulness of state dental examining boards has about ceased or may cease in the future. Would that be the heaven of dentistry or dental perdition? The letter contains many good points well put from the standpoint of a man in sympathy with the efforts which colleges conscientiously make to educate students to practice dentistry.

We notice the death of Dr. Evans, of Paris, just reported. Certainly the name of no dentist has been so heralded before the public as that of Dr. Evans. Perhaps, though, no other dentist has ever accumulated thirty million dollars. Is this fame?

Very truly yours, CINCINNATI.

CLEVELAND LETTER.

To the Editor of the Digest, CLEVELAND, NOV. 13, 1897.

DEAR DOCTOR:—I am perfectly willing to comply with your request for a little gossip, but our Cleveland men attend so closely to their professional duties that they find little time to exchange ideas. However, I will try and give you the news.

Just at present the local profession are preparing for the state meeting at Columbus next month, one of the features of which will be an all-day clinic, and we expect a good attendance from this city.

Our local society is flourishing and, contrary to the history of most local societies, is gaining in membership and attendance. Just here it seems pertinent to remark that most of the trouble in dental, as in other societies, arises from personal jealousy, all of which can be eliminated if the viper be knocked on the head so soon as he shows himself.

Our young men are taking an interest in society work. Business with them must be good, for they are getting married; no less than three have become benedicts within the past month, Drs. Spargur, Price and Parsons being the happy trio.

We were greatly shocked to learn of the death of Dr. D. R. Jennings, which occurred last month. He had not been in the best of health for some years past. His operative work will long stand as a monument of his skill and fidelity to his patients. Appropriate resolutions and floral decorations were furnished, and the members attended the funeral.

Perhaps before closing it might be well to explain the plans adopted by our local society. The dues are $10 per year, whether a member is present or absent. This entitles him to nine banquets. We meet at the Hollenden Hotel at 5:30 p. m., the first Monday in each month, and finish whatever business may be on hand. The paper of the evening is then read and the discussion opened by two who have been appointed at the previous meeting, after which a general discussion is joined in between the courses.

Fraternally yours, CLEVELAND.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, Nov. 17, 1897.

As the months roll around we renew the pleasure of reading your breezy yet dignified journal. In the editorial department there is always something solid to digest, while the letters usually give us something light and tasty in the way of a dessert, or, as we used to say when boys, "to top off on." Some of your recent correspondence though has been so highly flavored that many of us are falling back into our boyhood ways and are looking for the dessert first. "New York" always gives us something good, while "Quaker" sends in a newsy, personal, pointed communication. He writes at such a gait that the point is growing a little sharp. However, when a boil is to be cut we need something sharp.

Well, the last month has found us all in our places, down at hard work. The colleges are in full blast, larger classes than ever, and the faculties (some of them) seem even more zealous than of yore. Higher standards seem to bring higher numbers. Now the Association of College Faculties should formulate, and enforce, a rule that would shut out the men of a low moral fiber. It is too visible that one of the weakest points in our profession to-day is its moral and social standing; and the latter depends largely upon the former. Not all of us, of course, are lacking in moral sense; we can look around and see many who are leading upright, manly lives. But there are many, a great many, who care nothing for the moral side of life, who have no conception of a clean heart and a clear brain. To be a man in the fullest sense of the word is one of the greatest privileges our creator has given us. Pardon me for digressing; you asked for news.

The local societies, too, are down to business again, and it looks as though we were to have a season of renewed interest. The Academy of Stomatology had an interesting contribution from Dr. Broomell three weeks ago. It embraced the development of the teeth, which he presented before the meeting at Old Point Comfort. The Doctor deserves much credit for his painstaking work along these lines.

The Odontological Society seems to have renewed its youth. A medical man in the chair is a novelty, but Professor Brubaker has been a teacher at the old Pennsylvania College for many years, as well as at the Jefferson Medical, and is quite as popular among the dental boys as in the medical fraternity. Dr. Brubaker has shown much interest in purely dental subjects and there was a nice courtesy shown in electing him to the presidency of this society.

Last month we listened to a paper from Dr. George W. Warren on the ''Therapeutic Treatment of Infected Tooth-Root Canals.'' While this is an old subject it seems to revive considerable interest, and was discussed by Professors Peirce, Truman, Litch and others. This month ''Cataphoresis'' was presented by Mr. Werner, a practical electrician, and Dr. Howard Roberts and S. E. Gilbert. The meeting was a protracted one, yet there seemed to be much more to say upon the subject.

Dr. Bonwill is back with us again after his four months' trip abroad. He says he has talked almost incessantly ever since he left America, and we don't doubt it. Some of us do not agree with the Doctor in all that he talks about, but he has done much to bring dentistry to the high place it now occupies, both mechanically and artistically, and should have the full credit of it. Who of us is not enjoying something to-day which was evolved from Dr. Bonwill's fertile brain.

We regret to record the death of Dr. Thomas Evans, of Paris. He was a Philadelphia boy, and recently visited this city on a sad mission, the burial of his wife's remains. He was borne down by his sorrow and did not long survive her. We may say more of him again. Fraternally, QUAKER, JR.

LETTER FROM CANADA.

To the Editor of the Digest, MONTREAL, NOV. 15, 1897.

DEAR MR. EDITOR:—We in this far off province of Quebec are not much heard of, either through your American journals or at your society meetings, therefore we will endeavor by a series of letters to inform our cousins over the border what we have done, what we are doing and what we expect to do.

In 1869 a few of our older dentists secured from the Provincial Government incorporation under the appellation of the "Dental Association of the Province of Quebec." They secured for us exemption from jury duty, thereby putting us on a par with the members of the medical profession; they have power to enact rules and regulations respecting the honor, dignity and discipline of the members of the association; the examinations for admission to the practice of dentistry, and generally for all manner of things in connection with the profession. They also received power in 1892 to make arrangements for the establishment of the "Dental College of the Province of Quebec," in affiliation with the English and French universities of the province. We will speak of the college later. The Dental Association is composed of all the licentiates of the province. They pay an annual fee of $2, which, with the license fee of $60 on graduating, forms a fund for the payment of the examiners and for the protection of the members, as the board is thereby enabled to engage a detective to ferret out those practicing illegally and to punish them in the courts.

The members of the association meet every three years in September to elect a board of examiners, which consists of seven of the members. This election is by ballot, the members elected serving for three years, and they are charged with the management of the business of the association.

This is a most excellent method of choosing a board, and far superior to the manner in which a great many of the state boards in your country are formed—by the governor, for no one can possibly believe that he is so well qualified to select the members as those with whom the candidates are coming in contact every day.

Should the board elected prove a poor one, the members have no one but themselves to blame, and the stay-away members—those who do not attend the meetings but criticize the work of the others—make a solemn vow that they will attend the next meeting and do wondrous things. When the next meeting occurs, however, they have forgotten their obligation.

In one particular our dental board is behind the times, and that is, in the way they present their report, namely, by reading it at the regular meeting. This is a waste of time, as one cannot digest what is read to him, especially as the reading embraces the work done during three years. We think it would be more up-to-date to hold the meeting each year and let every member have a printed report in his hands at least a week before the meeting, so that he could read, inwardly digest and be able to criticize the contents when the meeting took place.

The board does not recognize the diploma of any college, excepting that of the university with which the dental college is affiliated, nor does it accept the license of any state or neighboring province. In our next letter we shall speak of the necessary course preliminary to practice in this province.

We have something which we think is entirely new to the profession, namely, a consulting dentist. Dr. W. George Beers, of considerable literary as well as dental ability, has given up his regular practice and entered on this new venture. Will he succeed? We hope so, but are doubtful.

Dr. Peter Brown, well known as a skilled operator and an expert in electrical affairs, has been very ill for the last few months, which necessitated his taking a partner, Dr. A. Scott Ives, of Quebec. Dr. Brown has been rusticating at Richmond, Va., and we hope for his speedy recovery.

Dr. R. W. Watson, Treasurer and Professor of Mechanical Denistry at the college, was married on the 15th inst. to a young lady from Detroit. He was banqueted on the 8th by his fellow members of the faculty. We wish "Bob" every happiness in his future life.

Owing to the death of Dr. John Gentles, vice-president of the Montreal Dental Club, and the illness of some of the officers, there has been no meeting for some time, but we understand there will be one next month, when Dr. J. H. Springle will read a paper on "Hypnotism." Fraternally, MONTREAL.

NEW YORK LETTER.

NEW YORK, NOV. 20, 1897.

To the Editor of the Digest,

MR. EDITOR:—"The knowledge that will hold good in working, cleave then to that"—back cover of the October *Cosmos*. We wish to apply this to the editorial of the *Cosmos* on "More Chloroform Fatalities," which affirms that the use of chloroform in dental surgery should be discontinued. We regard the editorial as lacking breadth or liberality, for while we admit on general principles that the use of chloroform to produce unconsciousness in minor operations should be discontinued, for producing loss of sensation in certain cases it is of far too great a value to admit of its being abandoned. To write such an editorial, and overlook the well known facts concerning the value of chloroform for anesthesia in minor operations, shows, we think, a misguided zeal. We do not deny that fatalities are very commonly associated with loss of consciousness, yet there is a great variance of opinion among competent men as to the cause. The records of the Scottish hospitals show that the percentage of fatalities in the use of chloroform is lower than in that of ether, and this is not the only testimony. We do not aim to reconcile these differences, our only object in referring to the editorial in question being to show the weakness of it, and to emphasize the value of chloroform in minor operations of dental surgery.

"The knowledge that we have found to hold good in working" we purpose to cleave to, and give it out to offset the lack of knowledge on the part of the editor. He cannot plead that he does not know these facts to be true. From a practical knowledge since 1874 we feel justified in our position. Our first experience with it was when it was used upon our own person by the late Dr. Riggs, while demonstrating his treatment of "Riggs' disease." The results were then and have since been so convincing that we unhesitatingly pronounce chloroform a blessing, and not necessarily dangerous. We shall not hold ourselves responsible for "ignorant persons" who may misuse a good thing, however.

All journals have a habit of saying that they are not responsible for the views of writers, etc.; but we are disposed to hold the editors responsible for what they say, as they are supposed to have a breadth of view and a knowledge of conclusions that cannot generally be accorded to lesser beings. It may be argued that only complete anesthesia was dealt with, but the inference is that chloroform is an article to be let alone by dentists. Many older practitioners are too firmly grounded in their views to be misled, but the young men are not so safe, for they are listening to those who are supposed to know what they affirm. But it occurs to us that the editor in question is also young. We suggest that he study and give the proper range in his editorials.

Artistic dentistry pays in New York. We have seen a case, the results of which were so satisfactory to the patient that a check for $750 was very cheerfully given in payment. By artistic dentistry we mean regulating the anterior teeth by torsion, by the use of silk, etc. We are always glad to see a generous fee given for valuable service, but such a spirit has not been very freely manifested, particularly in New York and Brooklyn. A prominent dentist said to us recently, "It is a strange thing that while more legislating has been done in New York state than in any other to keep down quackerish practice in dentistry, yet there is no other place where it prevails so largely." A leak somewhere.

The first district society has appropriated $250 to the Academy of Medicine for the support of the A. L. Northrup Dental Library, given to the academy some three years ago. We do not know whether or not the dentists have free access to this library unless they have a membership in the academy. We hardly see how they can.

Dr. Corydon Palmer, of Warren, O., has been on a visit to his sons, Delos and Eugene, and we have met him. He is 77 years old, yet fully alive in good inventions for dental practice, some of which we saw, and they seem perfect in every particular.

The sad news of the death of Mrs. McQuillen, Dr. Dan's mother, greatly grieves us. She was a noble woman, and our acquaintance led us to esteem her highly. We last saw her when Dr. Atkinson was alive. To lose such a mother is a great misfortune, and we tender our warmest sympathies to both Dr. Dan and his brother.

The printer has twice led us astray in our last letter. First, we said we endorsed the term of "chronic alveolitis" as possibly the best one; it may so prove. We further said of the paper on "Pyorrhea" that we thought it the best one we had yet heard. Second, the correction in regard to the death of Dr. Tenison, so printed, was that it was wrongly spelled. It should have been Tunison. A New York dentist spent a two-cent stamp to rectify the error, for which we thank him.

As regards the recent election in New York, you cannot level human nature down to right courses by politics. "Quaker" sees that in editorial weakness. If one charges another with big-head, he will probably be accused of the same failing. Young men are not safe in the editorial chair of a journal; they do not fill it gracefully.

Dr. Winkler's article in the October DIGEST is worthy of a careful perusal, and will convince readers that they do not know it all yet.

The question of dealing with dentists already in practice, as started by "Oriole" in the October DIGEST, should be taken up. We wished not long ago to be of assistance to a practitioner in Massachusetts in the same plight as the one in Virginia, so we addressed a letter to the "authorities" and enclosed a stamp for reply. We lost the stamp. While asking and answering questions, let us propound another: Is it progress in dentistry to put a medical man in as dean of a dental school?

We have many deaths to record this month. Dr. Edward Newberry, practically the founder of Brentwood, L. I., a dentist of considerable reputation, a well known single-tax advocate, and a spiritualist of some local renown, died Nov. 13. He was in many ways a remarkable man. We have seen some of his paintings, and for harmony of color they were striking.

Dr. Cyrus Ferris Rich, age 71, former president of the New York State Fourth District Society, died in Saratoga this month. Dr. Rich has long been well known and much respected. He bore a remarkable resemblance in feature to Prof. James Truman. He leaves a son as successor in his practice.

Dr. W. W. Sheffield, a prominent dentist of New London, Conn. has also passed away. He was 70 years old when he died. We have personally known him for 35 years, and remember that he was present at the first operation when a mallet was used by Dr. Atkinson. At that same meeting Dr. S. P. Miller suggested the use of sandpaper strips as a "flexible file" for finishing approximal fillings, and said he had used them for several years. Dr. Sheffield has had for 30 years one of the best practices in New England, and his work bore the stamp of ability. In his later years he was identified as president of the International Tooth Crown Co. We are glad to say a kindly word in his memory, for he had many good qualities.

We take the following from one of the daily papers: "A Russian dentist has at last solved the problem of supplying us with false teeth which will grow firmly into the gums. They are made of gutta-percha, porcelain or metal. At the root of the tooth holes are made, and also in the cavity, and in a short time a soft granulated growth finds its way from the jaw into the holes of the tooth and gradually hardens, thus holding the tooth in position. It does not matter in the least whether the cavity in which the tooth is placed be one from which the natural tooth has recently been drawn or whether it has been healed for months or even years." We wonder if Dr. Younger met this dentist while in Moscow.

A man drank two ounces of carbolic acid a few days ago, because of unendurable pain from a toothache, and died an hour later. He had been advised to have the tooth pulled, but had refused, saying that it would do no good, as the pain was in the gum. He was not altogether wrong, as pain in the gum is more of a factor in connection with toothache than was once thought. Abscesses without loss of pulp are a very misleading phase of dental practice. A case recently came to us which had been diagnosed by the former dentist as "Riggs' disease." Something had caused an abscess on the buccal surface of the first superior bicuspid, which caused the tooth to loosen, but the pulp was still alive. We merely devitalized the pulp and healed the abscess. These cases are often accompanied by excruciating pain. On further thought, we will emphasize the above case, feeling that it can be instructive to many. The patient has since returned to us, and we found that the prognosis was correct, and the tooth is tightening up.

At last the public are to be educated, for we see that the Central Dental Association, New Jersey, had a paper entitled, "Some Studies of Dental Education in the United States," illustrated by charts and object lessons. The program read, "Do not miss hearing the reading of these papers, as they can be assimilated by the laity as well as the professional man." This is not a bad idea, for the public need to know how dentists are being educated by legislation.

The First District Society has had the subject of sterilization before it. We think, to make things sure, the patient, office and dentist should be frequently sterilized. That is, of course, in some rare cases, for as a whole the dental profession is becoming much more neat and tidy. Cordially, NEW YORK.

BALTIMORE LETTER.

Dear Digest: BALTIMORE, NOV. 13, 1897.

Do my tail feathers seem to be on straight? and am I such an ugly, disagreeable bird? I had a very rough experience recently and all because I have been so indiscreet as to warble discordantly about things which others know so much more of than I. What a foolish bird I am to be sure, to try notes that don't belong to my family; but alas, having once tried the strange new way I must keep it up, and who can say that in the dim and distant future orioles may not grumble and complain like the veritable "Sandy Mocker."

Well, the Maryland State Society was called together last week to hear a report of progress from the committee appointed to amend the dental law, and incidentaly to vote the committee some money to pay a lawyer to draw up the document. The committee, it seems, don't intend to have any halfway law this time. Their counsel has informed them that the text of the old law is wofully barren of "lawyer-like phrases." I suppose he must mean such expressions as "whereas the party of the first part, etc., etc." I have an object in repeating this, for I know the old law to be a compilation of sections and clauses in other state laws, and I think these other states ought to know what an impotent and helpless thing a law is which is not made body and soul by a lawyer.

To continue, the committee got the promise of the money, and Oriole got an awful drubbing and had some ugly things said about him. I feel awfully ashamed that my professional brethren should be so poorly versed in ornithology as not to know an oriole when they see one, and yet some of our best men got up in the meeting and said they did not know who Oriole was, did not know that he was present, didn't care to know him, but if Oriole said thus and so he was a blankety blank. Now Oriole protests, first, that he was not correctly quoted, and second, that he is no blankety blank. He is just a plain little orange and black bird, whose feathers are often too gay for his meek and law-abiding spirit, but the things Oriole has said in his letters can be proven and those who so recklessly criticised him are invited to be patient.

The young graduate of Ohio, referred to in my last letter, secured his temporary permit to practice dentistry in Maryland after my letter was written. He described to Oriole his stormy interview with the president of the examining board, exhibited his certificates from other states, and complained bitterly of the law's delay and official contumely. After waiting nearly a week, with no certain assurance, the certificate which he sought was granted by the secretary.

I think it is apparent to every one that there is just cause for friendly criticism on account of this delay on the part of the board in granting a temporary license to one who came so well recommended; but it must be understood, at least from now on, that it was not my intention to complain of the board, but by this illustration to show the absurdities that creep into the execution of unlawyer-like laws by unlawyer-like men, all over the country.

The law is a machine with the directions for its operation, it provides that it is made only for the grinding out of certain products and that it will receive only certain materials. Given these materials, the product is invariable. As soon, however, as the operator begins to stiffen up the machine with a little personal arrogance and self-importance, the harmony of its action is destroyed and everybody, I think, will vote it a nuisance. Why will not men be broad enough to recognize the fact that men of all conditions have their rights, put away the feeling that because I can, I will, and play fair for the sake of the brotherhood of man and the fatherhood of God?

Let our new law be a model and then let it be humanely and politely enforced, not as was charged of the old law by one speaker at the recent meeting, that contrary to precedent and a positive understanding with its framers, it was construed to the whim and fancy of the board, simply because it had the authority, which authority had never been exercised before.

Everywhere we hear mutterings and discontent with dental laws and dental examining boards. Why? Few will be so bold as to say with Dr. Arrington, that dental boards are superfluous and useless. But down at the root of this whole matter is the personal equation: the "little brief authority" has done the damage, and who can be patient when they see men they have known for years bloated with self-importance and looking out over the heads of their betters.

Dental boards must be more moderate or dental laws will undoubtedly be repealed. Unfortunately perhaps for the people, the state legislatures still meet, and they are elected by the people, and just so soon as outraged sentiment becomes crystallized, reaction is inevitable.

The Baltimore dental schools are plethoric with candidates for the profession of dentistry this year.

Dr. C. M. Carr, of California, has been in our town for the past week or so. We hope his stay has not been either pleasant or successful, for while we are not advertising inhospitality from Baltimore, when we see a brother engaged in a career so open to criticism, we hope his path will be as thorny and uninviting as possible, so that he may be tempted to quit and be good. This gentleman seems to be trading on the fact that Dr. W. J. Younger is wearing one of his removable bridges, supported upon implanted teeth. Will you kindly say to Dr. Younger that Oriole (Dr. Y. spent last summer in Maryland and is doubtless familiar with my family), says that it is partly by the generous courtesies of the dental profession that he is enabled to charge a thousand dollars a minute for his services, and that Oriole thinks it is a very poor return to the profession to allow a peddler of office rights through the country to trade upon his name and reputation. Oriole advises him to take the teeth out and replant them. Send for Sudduth and have him hypnotize Carr and put him away in a vault for a hundred years, as Edward Bellamy did Julian West. Maybe when he awakes he will be ashamed of his peddling propensities. Isn't it a pity that men will get on the wrong side of a question? Now if Dr. Carr has a really good thing he could settle anywhere and make money, and obtain the respect and admiration of a community, but here he goes through the country making others ashamed that he is a dentist. The Doctor says, by the way, that he got all the best men in Washington. We'll have to send for Moody and have a revival at Washington if this is so. Good-by. Yours, etc., ORIOLE.

The Dental Digest.

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TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

COOPERATION.

We have been urging from time to time in the columns of the DIGEST, by circular and in other ways, the need of a closer bond of union in the dental profession. When the dentists realize what an advantage it will be to cooperate in every way possible, we shall then show a strength that will make us masters instead of slaves. We shall discuss this question very fully and in detail during the coming year in the DIGEST, and give a brief history of some organizations and the benefits arising from such concerted effort.

It has already been demonstrated during the last ten years in the Dental Protective Association what only partial organization can do. Suppose now that each reputable practitioner had united with us, and a membership of 15,000 had thus been created, what could we not have accomplished? There is still a chance, however, for each one not a member to atone for his neglect by sending in his membership fee of only $10. There is still a great deal for such an organization to do, and surely what it has already accomplished is sufficient proof that it is not an experiment. Are we not right?

AMALGAM DISCUSSION.

In this connection we call attention to a short article by Dr. Black in this issue, replying to a criticism upon his methods by Dr. Patterson. When any question is constantly under discussion it is a sure indication that there are elements in it which are not perfectly understood, and the disputes over amalgam have been constant for more than 30 years. An examination of the amalgam fillings of longer and shorter standing show such a variety of defects that it is not strange that most of the better class of practitioners use it only under protest, and some few have even refused to make any use of it in practice.

When the results of a long series of experiments made by Dr. Black were published, under the head of "The Physical Characteristics of Alloys,'' they did not attract attention from the profession to the extent that the merits of the work deserved. This might be expected when we remember that busy practitioners as a rule are not apt to follow so elaborate a presentation of a subject as this of necessity had to be. We therefore think it important to bring out from time to time some of the most important facts there demonstrated from a practical standpoint, before the average dentist will derive the benefit from Dr. Black's invaluable work. The first and perhaps most important feature of his investigations was to prove beyond a doubt what takes place when an alloy of certain proportions of metals is mixed with mercury and used for filling. There had been many attempts made to ascertain whether or not amalgam shrank while setting, but these were wholly unreliable; first, because the material in which the cavities were formed, usually bone, was subject to constant change from moisture, etc.; and second, no reliable methods were used to ascertain what the shrinkage or expansion was. Dr. Black used steel tubes in making his fillings, and constructed a micrometer by which the changes could be accurately measured. Shrinkage was the universal result with all the alloys in use, but this was only one defect.

What he calls ''stress'' and ''flow'' are two very important characteristics of amalgam, and accurate tests were made of them with the dynamometer. By making blocks 3-32 of an inch square in steel dies, and after they had hardened placing them under a pressure of 60 pounds, accurate measurements were obtained of how much this block changed its shape in a given time. It was found that quite a change occurred in an hour with many of the most popular alloys, and in three or four hours a block would flatten out into a disk-shaped mass. This is what Dr. Black calls ''flow,'' and it accounts for the bulged appearance of many amalgam fillings which are subjected to intermittent pressure. It was formerly thought that this was explained by the theory of amalgam having a spheroidal tendency in the cavity, but any one who will make a block of amalgam and subject it to a steady pressure of 60 pounds for a few hours, will be convinced that the spheroidity of amalgam fillings from year to year is mostly moonshine. This can be demonstrated more clearly if the block be made from an alloy that is known as ''plastic,'' for such blocks flatten out much more rapidly than when made from an alloy which is hard to amalgamate and takes much mercury and much trituration to make it plastic. An amalgam with these last named characteristics will not give up its mercury nearly so readily nor flatten out under the same pressure as will a plastic and easily amalgamated alloy. The latter can readily be squeezed into a cavity, but a perfect filling cannot be made from it. We will discuss this quality more at length in a later issue.

The third characteristic to which Dr. Black has given prominence, "stress," means the amount of pressure necessary to crush one of these same blocks. We suppose what is commonly termed "edge strength" would be an important feature here. With the dynamometer absolutely correct tests of the amount of pressure a block made from an alloy will stand before breaking can be made.

Combining these three qualities—flow, stress, expansion and shrinkage—decides the character of an alloy. We have been able to verify Dr. Black's experiments, and shall discuss them from time to time as occasion permits.

WHO WILL CONTROL?

We write this editorial with special reference to those entering our profession each year. This is not a new problem, but it is an unsettled one in the three professions of law, medicine and dentistry. In each one of these the contention is about the same—a plea for better educated material and more thorough training. This demand comes from the better class of men in each calling, and in such a way as to leave no uncertainty concerning their meaning.

The question of what constitutes legalized authority is still in abeyance in our ranks, and a prominent feature of the controversy at this time is the legality of a controlling board. The question is, will the courts uphold or sustain a board of dental examiners? What has transpired in Illinois relative to law students and to those legally qualified before being admitted to the bar will be of interest to discuss at this time.

The contention has been waging in the law profession in Illinois quite as vigorously as in our own. The charge was made, and what has recently taken place would seem to corroborate it, that the law schools were run as money-making institutions, that the preliminary requirements were ignored, and the ease and rapidity with which lawyers were manufactured was a great inducement for young men to take up that profession. The same has been charged of dental schools, but we shall not discuss this phase of the question at present, but rather emphasize the legal aspect.

This recent action, which is hereafter to regulate the qualifications of law students and the means employed to fix the standard of legal practitioners in Illinois, is of special interest to us at this time.

Growing out of an act of the legislature, demanding certain requirements to enable an individual to practice law in Illinois, the supreme court of the state has appointed or created a board of examiners which shall prescribe the requirements to be insisted upon in the examinations, which include a good moral character, a preliminary education equal to a high-school course, and three years' study of law before being admitted to examination.

It is not our intention in this editorial to give the law or court rules which are to govern the qualifications of lawyers, but rather to call attention to this act of the Supreme Court of Illinois as additional proof of what we have always urged in discussing the education of our profession, namely, that the courts had sustained and would sustain the action of examining boards, if such boards acted within the law, when the facts were properly presented to the courts. We contend further that any number of state boards can form a national association and act in unison, and their actions will meet with the approval of the courts It is probable, however, that regulations prescribed by such an organization would not be sustained in a given state if in opposition to the law of that particular state. Therefore, a very important step that should receive unanimous support is a uniform law in all the states. Then the examiners from the various states can constitute a national board which will be able to regulate the qualifications for admission to our ranks. Surely such an aid in enforcing the proper standard should be welcomed by every honest faculty in the land; in fact, it seems to us the remedy for an evil which now threatens the future welfare of our profession, for according to their own statement, the colleges in favor of a higher standard were in the minority, and consequently were outvoted at the last meeting of the National Association of Dental Faculties, and the desired requirements were rescinded by the colleges opposed to higher standards.

Now, suppose that all the states were represented by examining boards, and they looked carefully into the question, and from such information as they obtained decided what schools were reputable and what would be required as the standard for such recognition, keeping within reason as to the requirements, does any one question the good that would come from such a method, or the authority to so organize? So far as we can see, the present national board does not fall very far short of an authorized body, except that all the states are not represented, and it would seem that this action is all that is necessary to obviate the difficulty.

Notices.

SOUTHERN KANSAS DENTAL ASSOCIATION.

The Southern Kansas Dental Association will meet at Wichita, Kan., Dec. 27-29, 1897. U. S. HOUGLAND, Sec'y.

OHIO STATE DENTAL SOCIETY.

The next annual meeting of the Ohio State Dental Society will be held at the Neil House, Columbus, Ohio, December 7–9. One day will be devoted to clinics. J. R. CALLAHAN, Chairman Executive Committee.

NORTHERN ILLINOIS DENTAL SOCIETY.

The following were elected at the meeting held October 20 and 21. 1897. at Rockford: President, C. B. Helm, Rockford; Vice-President, Louis Ottofy, Chicago; Secretary, J. W. Cormany, Mt. Carroll; Treasurer, M. R. Harned, Rockford. Member Executive Committee, E. J. Perry, Chicago. The next meeting will be held at Rockford on the third Tuesday in October, 1898.

ROCKFORD ODONTOLOGICAL SOCIETY.

An auxiliary society of the Chicago Dental Society was organized in Rockford on the evening of October 20, at the time of meeting of the Northern Illinois Dental Society, with the following charter members: M. L. Hanaford, M. R. Harned, J. E. Harned, G. A. Furman, Boyant Kerr, C. A. Kitchen, C. B. Helm, H. C. Gill, F. C. Gill, C. J. Sowle, A. M. Harrison, J. J. Reed, J. L. Palmer, B. F. Ells and E. S. Tebbetts. A temporary organization was effected by the election of Dr. M. L. Hanaford as chairman and C. B. Helm as secretary.

NATIONAL ASSOCIATION OF DENTAL TECHNICS.

The fifth annual meeting of the National School of Dental Technics will be held at the Palmer House, Chicago, December 29 and 30, of this year. Its program will entitle it to even greater success than experienced at any time during its previous years of existence. Its leading paper, from Dr. G. V. Black, on "Instrument Nomenclature, with Reference to Instrumentation," will mark a historical period in methods of teaching the manual of cavity preparation.

D. M. CATTELL, Secy-Treas.
HENRY W. MORGAN, Pres.

LATEST DENTAL PATENTS.

592,002. Head rest, Alexander M. Denham, Santiago, Chile, assignor to C. J. and W. H. Ash, London, England.

591,982. Brazing apparatus, Theodore G. Lewis and F. M. Bailey, assignors to Buffalo Dental Manufacturing Company, Buffalo, N. Y.

596,746. Disinfecting device, Samuel Schwarz, assignor to R. Schobel, New York, N. Y.

592,878. Dental electrode, Francis L. Morhard, New York, N. Y.

TRADE MARKS.

30,758. Dentifrice, F. A. Sarg's Sohn & Co., K. K. Landespriv, Milly, Kerzen, Siefen, und Glycerin Fabrik, Vienna and Liesing, Austria-Hungary.

27,747. Brazing stand, design, Theodore G. Lewis and F. M. Bailey, assignors to Buffalo Dental Manufacturing Company, Buffalo, N. Y.

(List furnished by John A. Saul, Patent Attorney, Washington, D. C.)

RESOLUTIONS ADOPTED BY MISSOURI STATE DENTAL ASS'N.

Whereas, in the providence of Almighty God, He has seen fit to remove from our midst two of our most valued members, Dr. Wm. N. Morrison of St. Louis, and Dr. W. T. Reed of Macon, and

Whereas, the fine personal character, the high professional standing and the general individuality of each of these men, who have held the highest office in this society, makes their loss a personal one to every one of us, as well as to the profession at large; therefore be it

Resolved, That in the death of Dr. Morrison and Dr. Reed this association has lost two valuable workers, each of us a friend, and the dental profession members whose high ideals and ability made them an honor to that profession.

Resolved, That the deepest and most heartfelt sympathy of this association is hereby extended to the bereaved families in their affliction, and

Resolved, That this expression of esteem and sympathy be placed in full upon the minutes of this society, and a copy be sent to their respective families, and to the journals for publication.

(Signed) John G. Harper.
Emma Eames Chase.
G. E. Tainter, Jr.

RESOLUTIONS ADOPTED BY NORTHERN ILLINOIS DENTAL SOCIETY.

To the President and Members of the National Dental Association, and the President and Members of the National Association of Dental Examiners.

Gentlemen: At the tenth annual meeting of the Northern Illinois Dental Society held at Rockford, Ill., October 20 and 21, 1897, the undersigned were appointed a committee to draft and present to your associations suitable resolutions, with a view to remedy an existing evil regarding the interstate practice of dentistry, and we herewith submit the following for your consideration:

Whereas, a legal practitioner of any one of the United States, who desires to remove to another state, is, under the existing laws, compelled to comply with certain requirements of the dental law of that state, and

Whereas, in many instances such legal practitioner, sometimes of many years experience, is subjected to a more or less severe theoretical examination, which can not even be successfully passed by many who are fresh from the college halls; therefore, be it

Resolved, That the National Association of Dental Examiners and the National Dental Association be and are hereby requested to enact such rules, or to secure such modification of the dental laws of the various states, which, under reasonable restrictions, will enable competent practitioners to remove from one state to another without being compelled to submit to provisions which are eminently unfair to a large number of capable dentists.

LOUIS OTTOFY,
W. H. TAGGART, } Committee.
M. L. HANAFORD,

Attest:
JAMES W. CORMANY, Secretary.
Dated November 10, 1897.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(*Continued from page 683*)

MONDAY, AUGUST 2, 1897—MORNING SESSION.

The President called the meeting to order and the secretary called the roll of states.

Dr. Moore: As chairman of the committee on credentials I wish to report that the State of Missouri makes application through its representative, H. P. Lowry, for admission to the association, accompanied by the admission fee, and we recommend the election of that state. Also that we have the credentials of Dr. G. N. Rust, of the Virginia Board of Dental Examiners.

On motion the above report was adopted.

The President: Is the committee on conference ready to report?

Dr. Donnally: We have a very short report from the committee on conference, and while it was my understanding that the chairman of the committee of each organization was to sign both and commit the committees of both bodies to the changes, the papers have not been signed and I will read just what changes have been made.

Rule 1 remains exactly as it was.

Rule 2 is as follows. "The preliminary requirements prescribed by the National Association of Dental Faculties will be accepted by the National Association of Dental Examiners."

Rules 3 and 4 remain as they were.

Rule 5, in the second line, has the word "college" inserted between the words "separate" and "years"; there is omitted from lines two and three the following: "With three months' practical instructions intervening between the course," so that the rule reads as follows:

"Rule 5. Attendance of students upon three full courses of not less than six months' duration, each in separate college years, shall be required before final examination for graduation."

In rule 6, line 10, the word "to" is omitted, so that the last clause reads as follows:

"That such college must possess in addition suitable lecture rooms, a well-appointed dental infirmary and a general prosthetic laboratory, also must furnish in this way systematic instruction to its students."

There are no further changes recommended or agreed upon by the committee.

Dr McCurdy: Are those the rules that are now supposed to be adopted?

The President: Those are the rules that have been modified from the rules which you adopted here on Saturday; that is the modification of the rules as reported by Dr. Donnally.

Dr. McCurdy: Would it not be well to read those all over so that we may understand it? There are some here who perhaps misunderstand the rules.

The President: Would it not be well first to accept the report of the committee?

Dr. Donnally: And discharge the committee.

Dr. Meeker: I move the acceptance of the report and that the committee be discharged.

Dr. Moore: Is that a final report of the committee?

Dr. Donnally: The committee have no further meeting in contemplation. We have agreed and this is our report.

Dr. Moore: You will have no further conference with the Faculties?

Dr. Donnally: Not unless this body so directs us. If you accept the report and discharge the committee that ends the matter.

Dr. Moore: The reason I ask the question is because I think there will probably be some changes in the action of the Faculties as taken by them last Saturday and I did not know, if those changes were made, but it might make some difference in the report of the committee.

Dr. Meeker: In order that we may discuss the subject, I move that the report be accepted.

The above motion was accepted and carried.

Dr. Chappell: The association appointed the committee and we met and organized by the election of a chairman and a secretary and then took up each proposition and considered it. There was complete harmony on rule 1 As to rule 2, the college association could not see that it was advisable to require them to be bound by the full text of this section from the fact that during the afternoon they had completely wiped out their preliminary requirements as adopted at Saratoga. In formulating new ones it will take one year before they will be adopted, and it would not be a requirement for them until two years from now. Consequently after a thorough discussion of the matter we came to the conclusion that we would recommend to our body that the change be made. There was a little discussion in regard to the question whether we had the power to cross that out or not. Part of our committee considered our only duty was to report to you what the objectionable features were, and recommend that the corrections be made.

The President: Would it not be well, as Dr. McCurdy has suggested, to go through with each section and act upon it?

Dr. Chappell: As a finality?

The President: Yes, and then act upon the whole again.

Dr. Chappell: That has already been done and the amendments all adopted as a whole.

The President: Yes, but there is an alteration.

Dr. Donnally: It seems to me it would be sufficient for us to consider the changes that have been made and then consider it as a whole. I am sorry I did not make it complete and plain in my report so as to do away with the necessity of another explanation.

Dr. Chappell: After the changes in rule 2 are made it will read as follows: "The preliminary requirements prescribed by the National Association of Dental Faculties will be accepted by the National Association of Dental Examiners."

Dr. Brown: If that has not been adopted the committee on colleges would like to offer a substitute.

Dr. Faught: Since the adjournment on Saturday night and the action of the Faculties regarding the standard of 1884, your committee on colleges has been most constantly and actively at work. We have had conferences with the various representatives of the boards of the different states; also with the representatives of the College Faculties, and we believe that the resolution which we now offer as a substitute is one which is acceptable to the various state representatives and to both the college and the examiners' boards. We believe, more than that, that it is the highest *possible* standard that can be adopted at this time; and we know more, that a resolution similar to this will be introduced this morning in the Faculties' Association and that the resolution will of course lie over as has been explained to you and cannot become a law for two years. In order that we may maintain our laws and go on with the work of this association we offer this resolution as a substitute for rule 2:

Resolved, That the preliminary requirements of colleges for recognition by the National Association of Dental Examiners for the session of 1897-8, and 1898 9, or until such time as a satisfactory preliminary standard is adopted by the National Association of Dental Faculties, shall be that a student applying for matriculation shall present a certificate which shall be the equivalent of attendance upon the first year of a high school of the state in which he resides, or where no such high school exists, the equivalent of a certificate of graduation from the grammar school of such state, or that he shall satisfactorily pass an examination which shall be an equivalent to these requirements as shall be indicated by his state superintendent of public instruction.

The above resolution was seconded.

Dr. Donnally: Did I understand Dr. Faught to say that a similar resolution to that would be presented in the Faculties' Association?

Dr. Faught: It will be presented this morning and will go a little further; it will tie the lines a little tighter; it will break up the commercial trading back and forth between the states. While we are aware of the very desirable features that will be contained in such a resolution, yet we do not feel that we have any right to embody it in our resolution, because we have no right to take what they intend to do and act upon it before they act This standard, while it is not just as close as theirs will be, will be acceptable for the two or three years which may intervene before the adoption of the one which will be presented this morning in that association. We believe there is not the slightest doubt that the resolution adopted there to-day will go on the calendar and in time will be adopted, but it will take the regular routine time of at least two years before becoming operative. This resolution was not taken from theirs; we formulated this ourselves, and they, knowing that we had this, invited us to a conference with them and they were surprised to find how very closely our resolution and theirs met. Then they raised theirs to the high school; they only had it at the grammar school grade, and we met them on the graduation from the grammar school to cover those states that have no high school. So that we are in perfect harmony as to these requirements of preliminary education.

Dr. Donnally: I want to ask, for the benefit of all, if this board passes the substitute that you offer, would it become operative by its adoption by the National Association of Faculties, for the two years before they can, by their laws, establish a preliminary requirement? That is to say, does this make the way open for them to accept this and for the next two years have a standard that is better than the standard of 1888?

Dr. Faught: That is practically what it does. It makes the way open for all of the colleges to accept this in the interval, and I believe there will be no difficulty about their doing so.

Dr. Barrett: It strikes me you had better hesitate a moment before you adopt this resolution. Your regularly appointed committee on conference comes in and says one thing as the result of its deliberation with a regularly appointed committee of conference from that organization; the chairman of the committee on colleges reports a substitute, and I have listened to quite another resolution that is to be presented to the Association of Faculties today. I think before we act on this clause it would be well to find out just where they are at. What we do now we may be obliged to undo later, and why not leave this rule until we have something positive—until we know exactly what they are going to adopt, exactly what they mean; not to select one of three, or one of two even. They agreed on the report with Dr. Donnally, and Dr. Faught tells us they are practically agreed with him on the substitute. With whom do they agree and what are they going to do? I think we should postpone action on this rule until we find out what they do.

Dr. Donnally: I have no pet scheme. I have no particular disposition to urge the acceptance of this report from the committee simply because it is a report of the committee, but I want to explain that if we adopt this resolution we gain nothing—not a thing in the world. If the Faculties this morning, in their wisdom, see fit to accept (as Dr. Faught said they probably will) that report as an amendment to this, it will be just as binding.

Dr. Brown: I should like to correct Dr. Donnally there. Dr. Faught did not say that.

Dr. Donnally: Dr. Faught told me a moment ago he understood that would be offered as a substitute for this clause.

Dr. Faught: No; by a separate resolution. It is understood the resolution will not be discussed, but put upon the files to be regularly acted upon.

Dr. Donnally: If after they adopt this report of the conference committee this resolution is offered and adopted we are bound by it and agree that we will accept it. We cannot possibly fix the standard for colleges; we cannot enforce it if we do, and it is folly and foolishness for us to attempt to force them to something that they are not, by their own association rules, required to do. If we want to strike out the whole list of colleges or thirty-five or thirty-eight of them, we can do it; but what is the use of that? It is perfectly absurd. We know perfectly well that their rules will not permit them to prescribe preliminary requirements now or next year, or at any time, that will become operative before the session of 1899 or 1900. Drs. Pierce and Smith and Menzes all discussed this particular point. They would be very glad to have something of that kind. Dr. Adams had something of the kind which he suggested and which Dr. Morgan thought was impracticable in the form in which it was, but by some modification which has been made and which has been explained by Dr. Faught he thought it could possibly be enforced if it were adopted, when it becomes a rule of the Faculties' Association. They do not admit that we can make rules for preliminary requirements that are binding on them. There must be a voluntary acceptance not by the Association of Faculties, but by individual colleges. We have provided that if they accept it we will accept it, and we cannot do more than that; if we vote this committee's report down and put in a substitute we kill the whole thing. There is not a thing in it that is binding if we change one single word or make any alteration whatever, and we will lose the whole benefit of what we have gotten them to consent to.

Dr. Klump: The substitute is covered by the recommendation of the committee because the committee accepts what the National Association of Faculties accepts, and we don't know just what that is. It seems to me that we had better vote the substitute down and then we will have whatever they accept.

Dr. Brown: But that is two years off; do you want to let down the bars for two years?

Dr. Klump: How are you going to keep them up?

Dr. Brown: Put them up ourselves; we are not dependent upon their action.

Dr. Donnally: How would you enforce these rules?

Dr. Brown: Simply by sending this resolution to each one of the colleges on our list, asking them to subscribe to it and refusing to put any college on our list who will not subscribe to it.

Dr. Donnally: If the colleges who refuse to do so were in the large majority they would decline to recognize us at all and we would not be anywhere.

Dr. Brown: Why not? Where are we now, as far as that goes? Our list is simply a recommendation to the state boards for their guidance.

Dr. Donnally: I will tell you the difference, doctor, right here. If we accept the rules they make after they make them, then we can come in and enforce them, and report the colleges and do them some harm, provided they violate their own standard. If they fail to keep up to their own standard we can do something, but if they fail to keep up to our standard we gain nothing by it.

Dr. Brown: According to Dr. Donnally's idea then, because the Faculties' Association have taken down the bars and opened the gates, we are to follow their suit and do exactly the same thing! One of the deans of one of our prominent colleges, in conversation with me a few moments ago, said: "This action, if it is not changed at this meeting, simply means that a man in coming to one of our colleges has to pass an examination as laid down by the rules of 1884. We ask him to write his name; if he can write it he passes the examination, if he can't, why it is all right any how." There is the standard—are we willing to accept any such standard as that? There will be a resolution offered in the Faculties to-day that may cover this matter satisfactorily; it is claimed by some they can cover the two years by a resolution requiring a standard similar to this. It does seem to me, however, that after all the work this association has done to raise and maintain the standard of preliminary education we are now dropping the whole thing that we came here to work for, and that with the backing of a great many of the colleges; all the colleges that wish to come in and have made satisfactory application are willing and glad to subscribe to this very thing and have so expressed themselves this morning.

Dr. Barrett: I move that the matter be laid upon the table for the present until we have a report of just what they have done; it is a waste of time to talk this matter over; we cannot arrive at any intelligent conclusion. When we know what they have done we can act intelligently, but not until then.

The above motion was seconded and carried.

Dr. Chappell: As to rules 3 and 4 we are in perfect harmony. In rule 5 the word "college" was put between "separate" and "years." The clause requiring three months' practical instruction was stricken out. It seems that some states could not be governed by this rule as it would be a direct violation of their law.

It was moved and seconded that rule 5 as amended be adopted.

Dr. Lowry: I do not think we should make the first change referred to, for there is quite a difference between three college years and three "calendar" years. It is possible for a man to graduate in two calendar years and at the same time put in three college years. The object of making it three calendar years was to cover three full years of time and give the students that much time in the study of dentistry before they graduate, and not allow them to graduate in three college years which might be covered by two calendar years. That word "college" ought to be stricken out, and it should be made two calendar years instead of three college years.

Dr. Donnally: The gentleman has the right idea but the wrong way of getting at it. By making it calendar years a man may take three terms of six months each within two years, but by making it read "three separate college years" he cannot. It is necessary to make it college years in order that he may not take three college terms of six months each in two calendar years, and that is the very reason it is put in that way. The first term, commencing October, 1897, let us say, the second in October, 1898, and the third in October, 1899.

Dr. Chappell: We have one college in the United States, if not more, which begins its sessions on the first of January.

Dr. Donnally: But they still have six months before the college closes.

Dr. Keefe: Can I have that section read again?

Dr. Chappell (reading): "Attendance of students upon three full courses of not less than six months duration, each in separate college years, shall be required before final examination for graduation."

Dr. Lowry: I don't see how you are going to cram three calendar years into two college years, but I can see plainly where you can cram three college years into two calendar years. I think I have got that accurately—that you cannot put three calendar years into anything but three series of twelve months each; you can put three college years into less time than that, because a college year is only six months. It is very plain that you can put three years of six months each into three years of twelve months each, but how can you put three years of twelve months each into three years of six months each? That may seem a little vague. [Laughter.] I put it all right but it is a little difficult for a man to follow, that is all. It is possible for a man to begin the study of dentistry in a college on the first day of January when some of our colleges begin the college year; he can continue there for six months, which will go up to June; then he can begin in October and put in one year and a half. Now there is one year and a half of college work in one calendar year, is there not? He can do the same thing the next year.

Dr. Chappell: He could not enter a college on a half term, but only for a full term.

Dr. Lowry: I am only saying what he can do in one year. He cannot take a half term. He must continue on until March, but he gets in a year and a half in one calendar year. When one college began in January and the other in July, it would be possible to put two college years in one calendar year. I want to have his mind on the study of dentistry for three calendar years.

Dr. Donnally: Under this rule he begins in one calendar year, and ends in the fourth calendar year after that.

Dr Lowry: No, he can end in the second calendar year after that. I say it is possible for a man to graduate in twenty-four months' time under that rule.

Dr. Smyzer: I think that exception is well taken. A calendar year consists of twelve months and a college year does not.

Dr. Donnally: Excuse me for interrupting you, but it is a well-known fact that a college year begins in July and runs to the next thirtieth of June.

Dr Smyzer: Colleges do not all have the same time of opening. But a calendar year means twelve months, and a college year does not. It leaves open a way for colleges to get around the law if they wish to. If you made it a calendar year it would be impossible for them to do so.

Dr. Barrett: There seems to be some doubt about this, but I think a way could be hit upon to remove all doubt. I think this rule could be framed so that there would be no question of doubt. In order to do that you could specify that a college year should begin on the first day of August and end upon the last day of July, or upon the first day of October and end upon the last day of September.

Dr. Chappell: You cannot affect the charter of a college.

Dr. Barrett: But you will not change it, and you can make that as a suggestion and frame the rule so that there can be no question of doubt. I think in the Faculties' Association they stipulate just that thing, that the college year shall be from August 1st to July 31st.

Dr. Brown: It seems to me this will all be taken care of by the Faculties' Association; there is no danger of their allowing any falling back on the three terms. There is a moneyed interest there which will take care of that feature of it.

Dr. McCurdy: Was this suggested by the Faculties' Association?

The President: I cannot answer your question; you will have to call on the committee.

Dr. Chappell: I am unable to answer that question now, because we had so many suggestions.

Dr. McCurdy: Maybe it is for the purpose of dodging the question.

Dr. Donnally: No; I will answer that most positively—that it was put in that way, instead of the calendar year, so as to follow the fiscal year of the college. It was done in good faith, in order that it might cover three years. A man could go to one college, under the calendar year arrangement, and commence on the first of January and take six months there, and go back to another college in July and take six months there; that makes twelve months in that year. Then he could go back to the first college, take a term and graduate in eighteen months altogether, if you follow the calendar year arrangement. But under this rule it must be six months in separate college years, and a college year is just as full a twelve months as a calendar year. Under this arrangement a man studying dentistry must necessarily be in college for two years and eight or nine months, and the only part of the three years that is lost is that part between the close of the college session and his graduation and the beginning of the next session. That is the only time he loses out of three full years of twelve months each.

Dr. Edwards: I do not rise to discuss the matter as a member of the committee, but simply to afford information. It has been asked which side that proposition came from to make that amendment. I made the motion myself to strike out the intervening three months of practical work, and then I do not know who started it, but it started us on this other point and it was arranged as it is. The first motion to make any change at all came from myself.

Dr. Donnally: It was explained that the college year was twelve months.

Dr. Edwards: Yes, that was discussed.

Dr. Lowry: I would move an amendment to that rule so that we simply strike out the three months additional and do not change the other part of the rules. To make it plain I move that the recommendation of the committee that the word "college" be inserted, be not approved. That the word college before the word "years" be stricken out, leaving it so that it reads "separate years" instead of "separate college years."

Dr. Keefe: I second the motion.

Dr. Lowry: The motion is that it be in three separate calendar years instead of three separate college years.

Dr. Chappell: It has been asked who suggested that change. Dr. Morgan, I believe, made the suggestion, but taking the other side of the question entirely—that having it the way suggested by Dr. Lowry would complicate the matter and make the whole thing inoperative, and the committee all agreed with him. They have gone over the subject carefully and, I think, thoroughly, and I understand that it is all right.

A vote was then taken on Dr. Lowry's motion to amend the same and lost. Thereupon a vote was taken upon the motion to adopt rule 5 as reported by the conference committee and the motion was carried.

Dr. Chappell: There was complete harmony on the other sections, excepting a mere clerical change in line ten of rule 6, where the word "to" was stricken out and a comma inserted. Those of you who have had experience in the passage of laws by legislatures know very well that when no penalty is provided the law is inoperative. Now we have no penalty provided in our law whatever, and I would make this suggestion as a new rule.

Rule 9. To more clearly enforce these rules it is hereby directed that any college violating these rules shall be taken from the recognized list of colleges. I move its adoption. (The motion was seconded.)

Dr. Donnally: That is provided for in the very first rule, which says that colleges desiring to be on the recognized list must do thus and so. I think we ought to make these things just as oily and smooth and nice as possible. We can take these colleges off one at a time when action requires it and I certainly would be sorry to see an amendment which would make it necessary to go back to the Faculties' Association with these rules. We can provide another rule later on to cover cases that may come up. Dr. Chappell talked about a law; this is not a law that goes to the Supreme Court of the United States or of Indiana, or the Court of Appeals of Virginia.

Dr. Chappell: It might go to Congress though.

Dr. Donnally: It is for us to provide for these things as they arise.

Dr. Chappell: As there seems to be some discussion about that I will withdraw it for the present.

Dr. Moore: I think Dr. Chappell is right. Provision is made in the laws for putting the colleges on the recognized list, but there is no provision for taking them off, and when you come to a question of law about it you cannot take them off; you put them there, and that is all. Why, my dear sir, you go into the legislature and get a bill passed and if you want that bill to be operative you must have an enactment that all previous laws conflicting with that law are repealed. If you do not, then you are going to have trouble with your law and it is not a law at all. You can pass a law forbidding a thing to be done, but if it is done you must have a law permitting you to punish for doing it. You cannot strike these colleges off after they have been once put on unless that is provided for in the law. I have been before the legislature for fourteen years, nearly every session, and I have been obliged to study law. Here you have no penalty. The Virginia legislature can make a law saying that a man shall not do so and so, but if there is no penalty at all the law is not operative. You have no rule or law by which you can strike the colleges off and we never have had such a law.

Dr. Brown: I move that this new rule which has been offered by the secretary of the conference committee, be referred back to that committee.

The above motion was seconded and carried.

Dr. Dowsely: The committee appointed to tabulate the returns from the states desire to present their report as follows:

Nine states have returned reports of the number they have examined and rejected. The numbers are as follows: Examined, 367; rejected, 132.

REPORT OF EXAMINATIONS—1896.

STATE.	No Examined.	No. Passed.	No. Rej'ct'd.	No. Graduates.	No. Not Graduates.	No. Registered.
Connecticut	13	11	2	11	2	11
Indiana	......	9	11	69	10	81
Kentucky	18	8	10	1	17	8
New Jersey	53	37	16	45	8	6
Pennsylvania	......	......	......	......	......	282
Rhode Island	34	32	2	29	5	32
Vermont	4	3	1	2	2	......
Massachusetts	214	136	78	......	......	......
Washington State	13	13	......	13	......	13
Tennessee	18	6	12	......	......	6
Maine	12	11	1	3	9	11
South Carolina	11	9	2	10	1	11
California	12	9	3	......	12	9
Mississippi	13	5	8	3	10	5
New Mexico	......	7	......	7	......	7
Total	415	296	146	193	76	480

On motion the above report was accepted.

The President: We must elect our officers at some time and if you are ready, and there is no objection, we might as well do so now.

Dr. Fredericks: I move we go into the election of officers.

The above motion was seconded and carried.

Dr. Meeker: We have twenty-one states present as follows: Alabama, Connecticut, Delaware, District of Columbia, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, Missouri, New Jersey, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia. Each state is eligible to vote ten votes.

The President: You probably understand, gentlemen, that when we vote for officers we vote by ballot and each state is entitled to ten votes. If there are two members and they desire to make a division they are entitled to five votes each; if there are more than two, each one is entitled to his share of the votes, if they desire to make a division.

The Chair appointed Drs. Clements and Fredericks as tellers, and the election was proceeded with, resulting as follows:

Officers for 1897-8—President, Dr. C. G. Edwards, Louisville, Ky.; Vice-President, Dr. Geo. L. Parmele; Secretary and Treasurer, Dr. Chas. E. Meeker, Newark, N. J., by acclamation.

On motion adjourned until three o'clock p. m.

(To be continued.)

News Summary.

VALUE OF MEAT EXTRACTS.—Professor Von Voit, of Munich, Germany, has investigated the extracts of meat and announces that such extracts have very little nutritive value, if any, and that their action is almost entirely a stimulating one, being due to their contents of alkaloids, such as creatin and creatinin.

BURNED BY ROENTGEN RAYS.—The daily papers report a case of extensive burning by X-rays in the person of a young woman who was skiagraphed in order to determine the nature of a supposed affection of the antrum of Highmore. It is stated that all the hair has fallen from one side of her head and that the skin of the face and neck was also blistered over a large surface.

IMITATION THE SINCEREST FLATTERY.—The DENTAL DIGEST was the first dental journal to systematically recognize European progress in dentistry, by reporting the best which the foreign journals contained, and the *Items of Interest* has recently added a department of "European Progress." The DIGEST was also the first to have a regular letter from different parts of the country each month, and the *Dental Review* is now following our lead. That is right, gentlemen, keep up with the procession.

THE LEOPARD CANNOT CHANGE HIS SPOTS.—The custom of taking articles from other journals and giving no credit therefor, which prevailed so largely in the old *Items of Interest*, and to some extent in *Welch's Monthly*, is now being adopted by the editor of the *Dental Brief*, who, by the way, was the editor of the two other journals named. In the November issue of the *Dental Brief*, under the head of "*Original Communications*," is an article by Dr. H. W. Allwine, on "Trichloracetic Acid as a Solvent of Necrosis," which was published in the June, 1897, issue of the DENTAL DIGEST.

BLOOD STAINS.—The statement has been lately published that a warm solution of tartaric acid is most efficient in removing blood stains from towels, aprons, etc. Acetic acid has long been in use for this purpose, and either acid will probably answer equally well.

EMERGENCY TRACHEOTOMY.—Waste no time in giving an anesthetic. In diphtheria there is already a blunting of the sensibilities. In cyanosis and coldness of the skin the sensitiveness to pain is greatly diminished. In burns of the pharynx and larynx be ready to operate at the first evidence of sudden grave dyspnea.

HEALTH IN CHICAGO.—During August the total number of deaths was 1,967 or 1.21 per 1,000, as compared with 1.40 per 1,000 in August, 1896. Of these deaths 755 were persons under 1 year, and 303 between 1 and 5 years old. The principal causes were: Infantile diarrhea, 362; other acute intestinal diseases, 360; diseases of the nervous system, 207; consumption, 153; diseases of the heart, 97; pneumonia, 66; cancer, 57; diphtheria and membranous croup, 47; typhoid fever, 42, and bronchitis 41 deaths.

NOVEL METHOD OF ARRESTING HEMORRHAGE IN A CASE OF HEMOPHILIA.—Dr. Bienwald describes, in the *Semaine Medicale*, an ingenious method employed by him to control the bleeding from a small wound of the face in a case of hemophilia in a child two years old. Having failed to arrest the hemorrhage by the application of ferric chlorid, some blood was obtained by aspiration from a healthy subject and deposited upon the wound. In a few minutes coagulation took place and the hemorrhage at once ceased.

RIGHT TO PRACTICE DENTISTRY IN SCOTLAND.—In the case of a man who had been prosecuted for the illegal practice of dentistry, the appeal court of Scotland has decided that for a person to put up a brass plate with the inscriptions "American Dentistry, A. Emslie" and "Dental Office," is not an offense against the dentists' act, as it does not necessarily imply that A. Emslie is qualified and registered. The person, whose dentistry may really be as bad as the worst Scotch instead of being American, as his sign would imply, has the right therefore to continue his practice without let or hindrance.—*Medical Record.*

INFORMATION WANTED—To gratify a pardonable curiosity, will the editor of the *Items of Interest* please state the name and duties of the colored man shown in the picture of Dr. William B. Finney's office, on page 860 of the November issue of that journal. Also, whether the horse and buggy in the first photograph of the same write-up belong to Dr. Finney, or are they merely put in to make the picture more realistic. Our only regret is, that a picture of the hand mallet, which "is a curiosity," is not given, care being taken to show the "circular depression accurately correct, an eighth of an inch deep and not more than a fourth in diameter." The mallet is graphically described, but a photograph would bring it still more vividly before us.

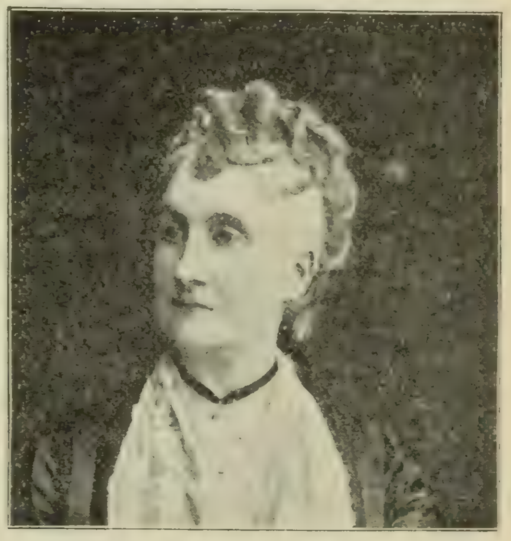
PRACTICE FOR SALE—I will dispose of my office furniture, lease, good will and practice to the right person. Possession given in February or March, 1898. Geo. H. Cushing, 919 Marshall Field's Annex, Chicago.

Obituary.

THOMAS W. EVANS, D.D.S.

Dr. Thomas W. Evans, the famous American dentist, whose picture with that of his wife is given at the head of this notice, died suddenly of angina pectoris, at Paris, November 14. He had never recovered from the shock of his wife's death.

Dr. Evans was born in Philadelphia about 75 years ago of humble parentage. He received a common school education, then entered the shop of a goldsmith, where his manual skill in making gold plates decided him to become a dentist, which at that time was a despised calling. He entered the Jefferson Medical College and graduated at 18 with honors. Later he won the gold medal of the Franklin Institute for proficiency in dental surgery.



He went to Paris in 1846, where he remained the friend of the United States during the Civil War, buying American securities when they dropped to very low points, thus backing up his statement that the Confederacy could not win. Dr. Evans was practically the first person to introduce gold filling for teeth into Europe. Since his advent in the French capital, Dr. Evans had attended to the teeth of most of the crowned heads of Europe, to say nothing of almost innumerable members of the royal families, including Queen Victoria and the Sultan of Turkey. At the time of his death he occupied the office of dentist to the royal families of England, Holland, Germany, Austria, Belgium and Russia, besides being the attendant of the majority of the most prominent families of the continent. During the course of his life he received innumerable orders and other decorations from foreign potentates. He was an intimate friend of Napoleon III, and during the Franco-Prussian war organized and maintained at his own expense an ambulance service that did incalculable good. He personally directed the movements of the Red Cross Society, and it is said was the only man in Europe who might pass from camp to camp.

When the French communists were seeking for the Empress Eugenie to destroy her, he disguised her as a maid and aided her in her escape. In Germany he is known and loved for the services he rendered the ill-starred German Emperor Frederick when, as the Crown Prince, he was battling for his life against the inroads of the disease to which he finally succumbed. The Prince was at San Remo dangerously ill with the disease of the throat which baffled the skill of the most learned scientists of all Europe, when Dr. Evans was called into consultation. Sir Morrel Mackenzie, the eminent English surgeon, and Dr. Bergmann of Berlin, were in charge of the distinguished patient. They decided on an operation to remove the growth and he was present. At this time the old Emperor William was also lying sick unto death. It was known that his death was a matter of only a few days' time, and also that unless the cancer could be removed from the throat of the Prince he would precede his father to the grave. A tracheotomy was performed and the bleeding which followed could not be stopped by all the efforts of the physicians in attendance. Dr. Evans hurried to a silversmith's shop, and with his own hands constructed a silver tube, which was fitted into the wound and stopped the bleeding. Twenty-four hours later Emperor William died and Frederick lived for thirty days as Emperor of Germany.

Dr. Evans' fortune, which is estimated at $30,000,000, was amassed largely by investing in real estate in the vicinity of the Bois de Boulogne, in Paris.

Dr. Evans left no children. He founded the Home for Young American Women in Paris, which has proved a veritable godsend to many an American girl abroad. When here in August he announced it as his intention to leave his fortune to the cause of education, probably for the founding of a national institute of dentistry.

In stature Dr. Evans was below medium height, had stooped shoulders, a thin face, high cheek bones, and wore short side whiskers.

The death of Dr. Thomas Evans closes the earthly career of a man more noted than any other practitioner of dentistry. From a worldly standpoint it has been illustrious and brilliant. Royalty of the greatest renown have not only honored him by placing themselves under his care, but have lavishly bestowed upon him in return for these services great remuneration. The world has set upon his honors a high value.

It cannot be doubted that Dr. Evans' career proves him to have been more than ordinarily endowed in worldly wisdom. There are few men, even had their lives fallen into such places, that could have reaped such a harvest. It would be impossible for a man like Dr. Evans to be without great generosity of heart, and, since he was so blest, not to have had a strong sense of appreciation. His biography, we doubt not one will be published, will read like a romance, and the souvenirs that have been placed in his cabinets will arouse a feeling of worthy pride that he was a member of our profession. We always felt in the presence of Dr. Evans that he had not been spoiled as an American. He was a gentleman by instinct, and he maintained this quality in all his associations with his fellow practitioners. Dentistry in Europe was raised by him to a height that it would not easily have attained otherwise. When we realize that he was taught in the school of fifty years ago, which was far deficient in instruction to the colleges of to-day, the natural capabilities of Dr. Evans are shown even more strongly. We have seen his work, as many have, and it did credit to the operator at his time. His financial accumulations make him appear a Monte Cristo, and there is a possibility that a large endowment is to come from this marvelous fortune for our so-called poverty-stricken profession. G ALDEN MILLS.

New York, Nov. 20, 1897.

The Dental Digest.

Vol. III. CHICAGO, DECEMBER, 1897. No. 12.

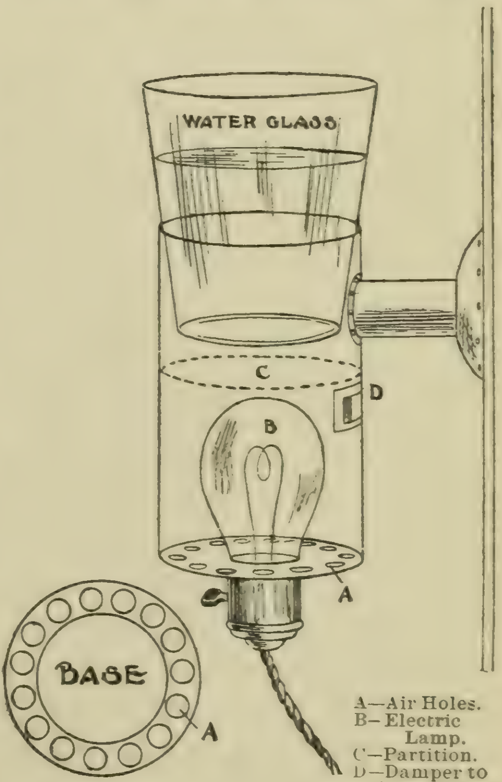
Original Contributions.

DEVICE FOR HEATING WATER.

By W. A. Heckard, D.D.S., Indianapolis, Ind.

Having found a cheap, clean and convenient way of keeping water warm, so that it will always be ready for syringing out cavities, etc., I herewith give a hasty sketch of the method. Take a small brass tube 2½ inches in diameter and 4 inches in length, which can be gotten at any brass goods store, and make a brass base for the same, with a hole in the center large enough to admit a 10 c. p. lamp. A brass tube, small in diameter and of any desired length, should be riveted to the large tube, so that it can be fastened to the wall or bracket. Put a partition in between the lamp and water glass to protect the eyes when getting a syringe full of water.

The lamp makes too much heat, consequently a damper is necessary. Put it in the back or on the side away from the operator, as no one wishes the light to shine in his eyes. The whole can be made very cheaply and does away with much of the present trouble in this line, besides making an ornamental and attractive addition to the office furniture.



A—Air Holes.
B—Electric Lamp.
C—Partition.
D—Damper to let out heat.

WORK AND RESULTS OF OUR DENTAL COLLEGES.

By H. W. Allwine, D.D.S., Omaha, Neb.

Having prepared specially to make educational work my profession, and having engaged therein a number of years, mostly as superintendent of schools, the work as done in dental colleges naturally attracted my attention while I was a dental student. I was quick to discern what I considered the efficiency or ineffficency of members of the faculty, from a pedagogic standpoint. The very meager preparation of many of the students, before beginning study of a profession of so grave responsibility, was also apparent. Noting these conditions and their consequences, the outcome to me seems natural. The results of examinations and methods of practice of many graduates bear evidence that something is wrong.

I have been much interested in articles along this line. Dr. Marshall, in the August Digest, gives some excellent advice concerning the work of our dental colleges. I think his remarks are timely and should be weighed by the profession. The causes of the poor results of our dental colleges are twofold. First, the work of the faculty is defective; second, the student has not had proper education and culture previous to entering the college.

As our colleges aim to raise the standard of their requirements by lengthening the terms and increasing the number of years of the course, they should certainly not forget the most important consideration—that of properly educating as well as instructing the pupil. In some of our colleges there is much room for improvement, and even for an entire renovation and revolution. The results of the examinations of graduates and the methods of practice bear evidence. We cannot wonder that many of our states refuse to recognize the diploma of the machine-made graduate.

Pedagogics is a science and an art. The educated man is not always an educator. The preparation of the successful teacher must be triune. He must not only have the *matter*—be a receptacle of the knowledge to be imparted—but he must know the *mind* to be instructed, educated and cultured, as well as he must know the *method* of uniting *mind* and *matter* harmoniously to bring about proper results. An educated and cultured mind will instruct itself. A purely instructed mind is a mere receptacle. Education and instruction go hand in hand. Instruction begins where knowledge ends and the powers cannot be further drawn out. My observations are such as to justify me in saying that too many of our college men are mere instructors and not educators. They cram the mind with facts, but fail to call out the powers that make man a living soul. They fail to give that much-needed culture, which is the developing power of the mind.

We hear and read of the requirements colleges make of their matriculates. Is it not a fact that in many cases little or no attention is given to the previous training of students? Is it not a fact that many are found whose crania are empty; but, turning the X-ray on the young man, dark round shadows are detected in his pockets? The objects which form these shadows are very necessary to the welfare of any institution. Is he rejected? We see young men who have no practical knowledge of English taking a dental course. Their orthography is very defective. They cannot construct a sentence grammatically and tell why it is so. Of the sciences and literature they know nothing. Mentally they are entirely unfit to begin the study of a profession whose care is the human body, the tabernacle of the soul. The aim of such young men cannot be high, because they are not capable of forming a proper ideal. The aim of colleges that admit such material must be pecuniary.

The lecture system is very faulty. Matter is given too rapidly. No time is given for digestion. Too much is given in a short time; it cannot be made sufficiently impressive. In many cases it is out of reach of the average student, and his only recourse is his defective and unintelligible notes. He gets things mixed, and before having righted them he appears before some state examining board with the "sucking mania," as the editor of the *Items* puts it.

I favor text-books. I believe that the subject matter of each lecture should be carefully studied by the pupil before the lecture hour. His mind is then ready for education along the line of the talk, and in a proper state for instruction; and, as no text-book can cover the subject completely, there is ample opportunity to add new matter and indelibly impress that which he has read. By preparing the subject beforehand, the student is ready to do a large part of the work of the hour and the lecturer knows where instruction is needed. The student is now able to take intelligible notes. The subject is mastered at every step before further progress is made. The instructor becomes thoroughly familiar with the attainments of his pupil and knows at the proper time where to cull. He does not depend upon the work done at examination to determine the pupil's standing. Such matter may be gotten largely from sources without, and the markings would not represent true standing.

I favor thorough preparation, from a pedagogic standpoint, of the lecturer or instructor. He should have his subject matter well in hand and be cognizant of the needs of his pupils, and not think only of the prestige he hopes to get through his college position in the estimation of the public. Fewer colleges, and well paid professional instructors, will give the public better professional service. An hour now and then given the students from a busy office practice, by the average man, cannot result in systematic presentation of the subject. Matter and method are most likely defective. Colleges that give this subject attention will speed along well in the race.

The importance of the dental profession demands a more thorough groundwork of the students preparatory to entering the colleges. It looks to me as if a backward step was taken by the Faculties' Association at its last meeting. If the object is to turn out merely mechanical men, whose stock of knowledge is narrowly limited to dentistry, and not to send forth men of culture who will grace a profession, then the present course of procedure is the proper one.

CATAPHORESIS.

By Arthur Holbrook, D.D.S., Milwaukee. Read before Wisconsin State Dental Society, July 20-22, 1897.

The success of all dental operations depends primarily upon *thoroughness*. Failures of fillings in living teeth can often be traced to improper or imperfect preparation of cavities, and on the other hand the success in almost hopeless cases of decay in "dead teeth" is due to the simple reason that the tooth could be properly prepared *without pain*. The pain inflicted has been a trial to the dentist as well as the patient, and it is safe to assert that not only the happiness but the health of the conscientious dentist is impaired by the terrible strain upon his strength and nervous forces. So the hearts and the brains of dentists have long sought for a means to allay the suffering of their patients; and it may be added, parenthetically, to the credit of the profession, that the seeking for relief has been upon the part of those who have inflicted the pain and *not* by those who endured it.

In this paper it is not my purpose to present an original idea or achievement, but to deduct truths from a great array of miscellaneous and often contradictory statements; and by giving the results of a somewhat painstaking personal observation and study to solve for some of you the problems which have arisen with what is perhaps the subject of most vital interest to the dental surgeon to-day—cataphoresis.

Because most dental operations are minor and the prognosis never serious, and because they are prolonged, the common use of a general anesthetic is utterly impracticable. So that with the common use of general anesthesia in surgery, it is a fact that more pain is inflicted upon the people by the dentist than by the surgeon of any other department of the science. For a decade article after article has appeared in dental literature presenting this or that form of local anesthesia, while in the advertising pages one could count scores of drugs and appliances which have been offered to secure truth for the quack who advertises his "Painless Dentistry." And it seems now that with our better understanding of drug action, with the development of histology, chemistry and physics, the time must be near at hand when we can apply our local anesthesia as successfully and commonly as does the general surgeon his ether or chloroform.

Of the methods of securing this result cataphoresis is the latest, and from a conscientious study of the subject and a very uniform success in its application, I sincerely feel that, with all its present imperfections and limitations, cataphoresis is capable of a development which will place it in the category of those discoveries and inventions by which the advance of our profession has been measured.

Although new in its application to dentistry, the use of electricity for the promotion of osmosis is old, and ever since Dr. Richardson expressed the theory in 1858, it has been used in medical and surgical practice to hasten and increase drug absorption. After its marked success in these fields it is not surprising that some of our original thinkers should conceive the idea of using it to facilitate the introduction of drugs into the hard, dense tissues of the teeth.

There are many theories as to the nature of electricity and its effects, and hence there are many theories as to how electricity promotes osmosis. Some students of cataphoresis go so far as to deny that osmosis of the drug into the tooth occurs, and that the anesthesia is accomplished by paralysis resulting from the current. Of this we shall have more to say later, and for our present needs we have but to accept the fully established fact—that molecular disturbance in a solid caused by an electrical current hastens the absorption of some liquids by that solid in the direction of the applied current. To this end we apply an electrical current in such a manner as to pass from the anode, applied to the tooth, through the tooth, through a part of the body to the cathode, which is most conveniently held in the patient's hand. At the point where the current enters the tooth is placed the drug to be absorbed.

Simple as this may seem, with the carefully arranged and simplified apparatus at our disposal, there are nevertheless a variety of elements that enter into the application of cataphoresis, which are of such importance that the failure of a single one may mean the total loss of effect, or may endanger the life of your patient.

I have read articles and accounts of discussions which show clearly that the men giving their experience with cataphoresis have lacked knowledge of the first principles governing its application. That they have bought their outfits and followed the arbitrary rules of the manufacturer's catalogue or agent, and are now disputing the real students of the subject, or revealing their ignorance by worthless magazine articles or a list of failures which they scoffingly present. The dentist must know his apparatus. There are many cataphoric outfits on the market, and many of them are thoroughly reliable. It is certainly unnecessary to follow the advice which has been given, for the dentist to manufacture most of the apparatus for himself, although he may improve many little details in the yet imperfected appliances.

If the instrument is connected to the street current with proper precautions, it is just as safe and reliable, and certainly cheaper and more satisfactory than the maintenance of office batteries. Of course the dentist must guard against the accidental grounding of the wire from the patient's contact with fountain cuspidor or other possibilities, but this insulation of the patient can be easily and perfectly accomplished. With many instruments the use of the street current is an impossibility, and even the stoppage of an electric car is felt by the patient; but with proper resistance before the current reaches the rheostat—and with a reliable rheostat the variation is positively unnoticeable and the current to all practical uses is unvarying—the change of pressure back of the resistance does not perceptibly influence the flow beyond the rheostat. I am able to quiet the fears of my most nervous patients when I explain that the system I use (from an electric lighting plant) has no overhead wires, and in the almost impossible case of a sudden shock—a crossed wire, a lightning stroke—there are between the outside wire and the patient, on different floors and in different parts of the building, seven separate fuses, any one of which would instantly burn out, as well as numerous lamps, rheostats and other shunts.

Having the instrument connected, it is necessary before application to determine the polarity of the current. How many a failure in the use of cataphoresis has been made by the careless application of the poles, so that the current was running through the body and *out* of the tooth—absolutely preventing the absorption of the fluid. I personally know of cases where dentists have recorded failure because of this fault, and many of these men who have found success in about every fourth application would raise their average by attending to the polarity. In my practice the attendant tests the polarity before each operation by applying the poles to a solution of iodid of potassium and noting the characteristic discoloration at the anode. Although in 100 cases so tested with my present apparatus the polarity has been nearly constant, I have known it to vary almost daily in other instruments; and, although having a reliable milliamperemeter in the current, I believe the various chances for possible alternations of current demand this repeated test of polarity.

The instrument being adjusted and the polarity known, it is now of the greatest importance that we determine the resistance offered to the current by the patient. Of this resistance, that presented by the body aside from the tooth is of comparatively small variation, while the resistance of the tooth itself may vary, as has been estimated, from five thousand to eighty thousand ohms. This is a point upon which I wish to lay particular stress, for many dentists in using cataphoresis attend merely to the *pressure of the current used*, with no knowledge whatever of the amount of flow of that current through the objective tooth. They may know the voltage of their current, and by diminishing a certain number of ohms on their rheostat, apply to their satisfaction a certain current strength, but with absolutely no knowledge of the resistance offered by that tooth, how can they intelligently determine the proper current strength to be used? Gentlemen, let me assure you that the turning on of a certain amount of current, with no reliable knowledge of the resistance offered to that current, is an act of folly, if not of danger. Personally I should never use a cataphoric outfit without a frequently tested milliamperemeter *to measure the current which flows through the tooth, thus indirectly measuring the resistance offered by the tooth and giving me a perfectly reliable guide as to the amount proper to apply.*

The track traversed by the arm of my rheostat I have divided into tenths for the purpose of noting and recording the minimum pressure to secure a certain flow of current through a tooth—which is shown by comparison with the milliamperemeter. Despite the increase of pressure from behind, a limit of current through the tooth and milliamperemeter is often reached and maintained because of the resistance of the tooth. But it must be remembered a high pressure upon a heavily resisting tooth may be injurious and even dangerous. Twenty volts is considered harmless for anyone to take, and to make the current absolutely safe it ought never to exceed that amount. To secure this safety the current can be easily regulated by lamp resistance so that it will never measure more than twenty volts even before it reaches the rheostat. The current can be easily and positively reduced through shunts by any expert electrician. With such connections and certain knowledge of the amount of current flowing through a tooth, the much discussed dangers from using a "110 volt street current" are not to be feared.

Before leaving the subject of adjustment of the apparatus I wish to urge upon you the necessity of keeping the instrument as completely out of the patient's view as is practicable. The temperaments of our patients must be carefully studied, and while we may have to explain in detail to the electrical genius, to the hysterical woman or the frightened child, the less display the more satisfactory our results, and the possible avoidance of a paroxysm that staggers us with fear of too strong a current or of cocain poisoning.

Thus understanding our apparatus, we must acquaint ourselves thoroughly with the proper methods of preparing the field of operation. We must remember the first axiom of electricity—that the current follows always the lines of least resistance; and hence make our first object the insulation of the tooth. The moisture which collects between the cavity and the gums, and adjacent metallic appliances or proximal fillings, are the commonest causes for a deflection of current from the solid resisting tooth. The external tooth and margins of the cavities must be carefully tried, while all adjacent metals, whether of fillings or appliances, must be guarded by insulating pads, a layer of wax or equally effective means. Deep-seated cervical and approximal cavities with old fillings, especially in molars, will often be found difficult to isolate.

Our attention should next be given to the drug we employ for the anesthesia. It has been claimed by some that this is of the least importance. It has been said that the usefulness of cataphoresis is limited to its hypnotic power, and that were the element of imagination eliminated, it would be without effect. This so-called psychotherapy, which our faith cures illustrate, is without doubt an element in many cases, but that cataphoresis depends on that little element for its success I am able to dispute point blank. To those who claim that water is as useful an agent to administer as any other I must also protest, for repeated experiments disprove the claim.

Perchance, in addition to the hypnotic element, anesthesia may be aided by more or less paralysis, and although I have never seen such a statement, it seems possible that Schleich's infiltration method may play some part in the deadening of the pain. This latter method, which the surgeon has found so useful in minor operations on soft parts, consists in infiltrating the tissues by hypodermic injections—enormously increasing the tension about the operation field. This has the effect of paralyzing or numbing the sensation of the area, and although accomplished in degree by solution of salt and water, it is far more effective by the use of a local anesthetic in the solution. As this theory has been found practical to the general surgeon, and of late to the oculist, I suggest the possibility of its being an element in dentistry, where solutions are forced with unusual power into the already firm, dense tissue.

Admitting these elements as aids to our anesthesia from the literature on the subject and from personal observations, I submit: *that the successful application of cataphoresis is impossible without the agency of a proper solution of cocain or other local anesthetic.*

At present there is before us no drug to approach cocain in efficacy for cataphoric application. In studying the preparations of cocain I have had considerable correspondence with an expert chemist, whose daily occupation year after year is the testing and superintending of manufacture of the greater part of the cocain used in this country. He says: "Cocain is the most easily decomposed of all alkaloids. Solution in water of the hydrochlorate (its common form) commences to decompose at once, although the process is very slow at first. If the solution is acid in reaction the decomposition is quicker, and heat hastens the process still more.'' The addition of antiseptics and germicides prevents the formation of molds, but there is no preventive yet discovered for the chemical decomposition. For us who formerly kept our cocain solutions for months, and had the bottle refilled from the druggist's stock bottle, this may explain some failures of applications. I was recently in the operating-room of a large hospital and was shown a row of bottles for hypodermic use; strychnin, digitalis, nitro-glycerin and others, *all in solution;* but on the end of the row was a bottle marked ''cocain,'' filled with powders and labeled with an injunction to make a fresh solution when used. So whatever preparation we use, it may be kept in powder, tablet or crystal form, and be applied from a fresh solution.

Since acid hastens decomposition we must secure a neutral or weakly alkaline reaction at the field of operation, and must assure ourselves that bottles, mortars, cotton and anything which comes in contact with the cocain are not soiled with acids.

As to the effect of electrical currents upon the stability of cocain there has been much discussion. I have reserved for this connection what I have to say regarding the strength of current employed; for it is not digressing from the subject now under consideration, but concerns it most intimately. There have been claims, and by excellent men, that a current strong enough to induce osmosis into a tooth would decompose cocain; by others that a strong current was necessary for the osmosis, and that the electrolytic effect on the cocain was what was necessary to produce anesthesia; still others assert that the weakest electrical currents cause electrolysis and are not sufficient to cause osmosis. Clinical facts disprove some of these views, and to corroborate the clinical experience and definitely decide the disputed points come the results of experiments under Professor Herdman's direction at Ann Arbor, which are undisputably reliable. The conclusions which he reaches that concern us are, in his own words: ''First. That cocain hydrochlorate solution is cataphoric. Second. That with the strength and density of current ordinarily employed in therapeutic applications there seems to be no decomposition of the cocain hydrochlorate at the anode.'' And he further concludes that although with these *weak currents* the *intact* molecule of cocain hydrochlorate may be transmitted into the tooth tissue, with moderately strong currents the molecule is decomposed. So of what value are these reports from dentists who failed in result, although, as they confidently state, "the current was so strong and painful as the patient could bear."

Gentlemen, do not look for anesthesia where your current causes pain, and put no confidence in the results of the operator who, without a milliamperemeter, gauges his current by the sensations of the patient, or the track of his rheostat. The records of any careful observer will show how weak a current may be effectually employed, how in a hard, dry, pipe-clay tooth almost complete anesthesia may be caused by a current strength of one-twentieth of a milliampere—one twenty-thousandth of an ampere.

If you are chemists enough to care for formulæ of the reactions in the decomposition of cocain, I have them; but aside from the fact of decomposition, the chemical reactions are of no particular interest.

As to the best preparation to employ, we must consider its purity, ready solubility and accurate and convenient division for dosage. For the purity we must depend upon a good druggist who provides us with the article from standard firms. The tests for purity are technical and occupy too much time for us. Most preparations of cocain are readily soluble in water—if we use crystals or tablets they lose no virtue in being triturated and dissolve more readily after such process. The alkaloid itself has been recommended, but as it is insoluble in water and must be used in alcoholic solution of one part cocain to three and a half parts alcohol it is generally undesirable, since alcohol is a poor conductor of electricity. However, this solution of the alkaloid is quite stable, and if absorbed acts quicker than the salts of cocain, so I would suggest the possibility of an advantage from its use in deep cut cavities or directly on the pulp, otherwise it possesses no advantage over the hydrochlorate, which is the most popular form in use and deservedly so. The hydrochlorate is best used in tablet form, which gives a convenient, stable, very soluble and accurately measured dose.

In my practice I am using soluble porous discs of the hydrochlorate, and one is soluble in a drop of water. Many of the tablets upon the market contain in combination more or less extraneous matter to give bulk and consistency, which additions often retard the solubility and effectiveness for dental purposes.

As to the dosage employed, there should be no uncertainty or fear where caution is used. Medical authorities give internally from a quarter to one or even two grains; specialists freely spray and swab the throat with a four per cent solution, representing two and a half grains to the drachm; surgeons ordinarily dissolve from a half to one grain in a hypodermic syringe barrel and inject the entire dose if necessary. I have found a report of a susceptible woman who was made faint, nauseated and depressed by about a quarter of a grain in the nasal passages; and on the other hand of a man who swallowed eighteen grains at one dose without an untoward symptom.

Before deciding on the dosage of cocain for us to employ, let us understand that the object of cataphoresis is not always to secure and maintain a complete anesthesia—local anesthesia is rarely complete, and the general surgeon with his readily accessible soft tissue never expects to perform his operation with a complete loss of sensation. What he strives for, and what we must strive for, is an obtunding of the nerve sensibility to such an extent that the operation is borne in comparative comfort.

The minimum dose of cocain that I can find advocated in the best literature is one-eighth of a grain. I can find no authority who would not inject this dose into an adult with impunity, while the commonly employed dose is between a half and one grain. So when I recommend that a tablet or powder containing one-sixth of a grain of the hydrochlorate be triturated and dissolved in a drop or two of water at the time of operation, and this be taken up by a small pledget of cotton and applied to the field, I do so with an absolute certainty that no overdosage will ensue. If every molecule of that cocain were absorbed it could not do the slightest harm, excepting in those extremely rare cases where a remarkable idiosyncracy exists, and never has a case been reported where one-sixth of a grain endangered life. But you can readily appreciate that under the circumstances it would be impossible for the entire dose to be taken. The cotton never absorbs all of the fluid; one-fourth at least is left of the original solution, and on removing the cotton after applying your current there may be squeezed out a considerable part of the dose. At the most exaggerated margin not a third of that sixth of a grain is absorbed, perhaps not a fiftieth. For argument let us say a third is absorbed—a dose of one-eighteenth of a grain, which is not enough to harm our youngest or feeblest patient.

This dosage of one-sixth grain represents one drop of about a sixteen per cent solution. Experience has proven that this dose is ample, and although seemingly too small to be effective, experiments fully show that its omission or substitution by water is without the anesthetic result.

If by any accident we should apply an overdose to our patient, if our assistant is careless, or our measure faulty, or if the patient swallows a quantity, we should look for these symptoms: faintness, giddiness, nausea, pulse small, rapid and intermittent, pupils dilated, severe prostration, respiration slow and feeble. To meet these conditions the patient should be laid flat and the clothing loosened, while we should employ every means of stimulation at our command. Get the patient thoroughly heated, give hot stimulating drinks, and if necessary perform artificial respiration by slowly raising the arms high above the head for inspiration and bringing them slowly forward and down on the chest with considerable pressure for expiration. Some dentists keep on hand the small pearl beads of amyl nitrite to be broken in a handkerchief, from which the prostrated patient inhales. They are very convenient and are highly recommended for cocain poisoning.

We must, however, differentiate between hysteria and cocain poisoning. In hysteria our patients would not have the intermittent pulse, they would be emotional and solicitous instead of prostrated, and their rapid, strong breathing would take the place of the slow, feeble respirations of the cocain sufferer.

The unfortunate element of time in the application of cataphoresis caters to this fear, for the patient, already wrought to a high tension by approaching operation, is made to quietly sit for a quarter of an hour with this strange, mysterious, electrical instrument applied—lightning strokes, crossed street wires, the electrocution chair are brought to mind, and if the patient be at all susceptible he is under most favorable conditions for a nervous paroysm. Until the present system be replaced by one that requires shorter application, we must study to divert our patient's attention and to be always reassuring of their safety.

Many patients are solicitous lest some permanent injury to the teeth follow the electrical application, and this fear is in every way reasonable, since it has occupied the attention of some of our leading thinkers. But the apprehensions of these more conservative men, that the long use of the current may injure the pulp, are being less and less expressed, since the value of very weak currents has become better understood and the clinical reports of hundreds of carefully applied and carefully observed cases have shown the harmlessness of the current.

Before we enter into a discussion of this subject I desire to briefly summarize the points I feel to be of vital importance to the dentist in successfully applying cataphoresis: First, to understand the fundamental principles of the theory of electrical osmosis. Then to thoroughly know his apparatus; its relations to the current it receives, with especial regard to connection, shunts and resistance, being certain for absolute safety that the current reaching the rheostat never exceeds twenty volts. The rheostat, particularly with reference to the control and steadiness of current. The milliamperemeter, to indirectly measure the resistance of the tooth, and to determine the amount of current. Next, the preparation of the field; its insulation from moisture, fillings, and appliances; its proper neutral or alkaline reaction. Then the reagent used: To properly select a preparation; to use a fresh solution and understand the liability to decomposition and those agents that assist decomposition; to select the proper dosage. Then to appreciate the value of a weak current, since it promotes osmosis and does not decompose the molecule. Finally, to study the temperaments of his patients—after which considerations he should be able to apply cataphoresis in a thoroughly rational and successful manner.

Discussion. Dr. Batchelder: I do not like the hand cathode, because the patient controls the current, and by simply moving his hand he will get more or less shock by breaking the contact. Sloughing of the gums almost always comes from impure cocain.

Dr. J. W. Boisol: I use eucain hydrochlorate instead of cocain, as I find that with a five per cent solution of the former there is no danger from absorption as there is in the latter, and there is risk in using cocain.

Dr. J. J. Wright: I use a direct current, and recently went to the assistant of the Milwaukee system to find out just how much danger I was running. He said there was practically no risk, as a large system, having a large power-house, employed enough operators to keep the current at about the same strength all the time. A small system, however, might vary.

ORAL HYGIENE.

BY EUGENE S. TALBOT, M.D., D.D.S., CHICAGO. READ BEFORE XIITH INTERNATIONAL MEDICAL CONGRESS AT MOSCOW, RUSSIA, AUGUST 18-26, 1897.

That the mouth and teeth should be kept absolutely clean and free from deposits, every practitioner will admit is but an axiomatic statement. Neglect in this direction entails degeneration of the teeth and soft parts of the mouth, which in turn ultimately affects the general health. Many dentists and most patients are unmindful of the necessity of keeping the gums and mucous membrane healthy. Frequently, despite strict injunctions are given, the patient returns with the mouth in the most unhygienic condition. The patient has gradually lost ambition and allowed the teeth and mouth to fall far beneath ideal prophylaxis.

As a profession dentists are apt to congratulate themselves upon the rapid advancement made in the specialty, forgetting that bacteriologic research demonstrates a fact which physicians and dentists have suspected, that the mouth is the culture medium for germs which, when opportunity offers, play their part in producing many diseases which flesh is heir to.

Galippe, Black and Miller, after special microscopic study of fluids and excretions of the mouth, have shown that this organ is a very fruitful field for the propagation of bacteria. Miller says, "Within the last few years I have isolated more than 100 different kinds of bacteria from the juices and deposits in the mouth. Physiologists and chemists have also shown that foods, especially starch and sugar, taken into the mouth, on coming in contact with the saliva, chemical changes immediately take place, as a result of which lactic acid is produced." Miller has found that lactic acid is the source from which decay of the teeth results.

It would be strange if some of the numerous bacteria, under favorable environment, should not produce diseases of the mouth, alimentary canal and general system.

Microorganisms are more destructive in the mouths of persons whose vitality is below par than those who are normal. People who have been ill for any length of time soon realize that the teeth are giving way, that pus germs infect the mouth and that the soft tissues are very unhealthy. A class coming for treatment, whose mouths are exceedingly prone to disease, is that of the degenerates.

It is almost impossible at present for the majority of dentists to distinguish this class from the normal, yet they exist in dental practice in large numbers.

The mouths of this class are in an unhealthy condition; the teeth irregular and often badly decayed, gums and mucous membrane swollen, with pyorrheal oozing from gums and teeth. Frequently ulcers occur at different localities, and saliva flows freely from enlarged glands. Degeneracy is stamped upon their faces. The bones and mucous membrane of the nose are often hypertrophied. In such cases adenoid vegetation, together with other obstructing factors, prevents nose-breathing and mouth-breathing results. Necessarily many germs otherwise absent are taken into the mouth, which afterwards infect the lungs and alimentary canal. These types of mouth are observed in their most exaggerated forms among the imbeciles, dements and stuporous lunatics. Local treatment of such patients would be fallacy.

I lay stress upon this class of cases, because of the lack of literature on the subject and the difficulty of impressing the patient with the importance of the care of the mouth. Such persons, even if otherwise fairly well balanced, are too unstable and have not sufficient continuous will power to carry out successfully instructions of the operator. These patients, including those who are afflicted with disease, require constitutional treatment to restore the tonicity of structure, after which local treatment proves successful.

I would not, however, for one moment be thought to discourage the attempt to keep the mouth in hygienic condition, especially in cases of invalids and small children, who must receive the greatest care from nurse or parent. As absence of general tonicity will prevent a local restoration to health, in like manner will lack of local cleanliness cause systemic disturbances. Besides illness, worry, anxiety, trouble will produce malnutrition and tissue degeneration.

It is not necessary to discuss the various bacteria and their action upon the fluids and tissues of the mouth, since this has been thoroughly brought before the profession by Miller. To treat the subject of this paper in a proper manner it is necessary to speak only of a few forms of bacteria which, if destroyed, the other kinds will succumb.

Two of the most marked forms of degeneration of tissue as the result of uncleanliness are tooth decay and gum inflammation, resulting in pyorrhea. Pasteur has remarked, "that whenever and wherever there is decomposition of organic matter—whether it be the case of an herb or an oak, of a worm or whale—the work is exclusively done by infinitely small organisms." Therefore I commend the following propositions: If the mouth and teeth were kept absolutely clean, so that chemical changes could not take place, the teeth would certainly never decay, no matter how imperfectly the enamel might develop. If the gums be stimulated in a proper manner, and kept in a healthy condition, they are decidedly less liable to become infected with pyorrhea.

Bearing these two propositions in mind and striving to attain the results, the mouth will become comparatively healthy. How then shall we accomplish the desired object? Use of proper toothbrush, mouth-wash and a knowledge of their use, is the indication. The ordinary toothbrush falls far short of what is required for proper care of the teeth. Most have soft bristles, or else they become soft, for the reason that they are sometimes kept in a closed vessel or used so often that they are not allowed to dry. A soft-bristle brush should never be used, only a medium or hard one. The size of the brush is also to be taken into consideration. Most of them are too large and on that account it is difficult to get beyond the molars. The shape of the brush is also to be borne in mind. Dr. M. L. Rhein, of New York, has taught the evolution of the toothbrush. The curved handle and small end which contain the bristles are certainly a great improvement over straight handles or those bent in the opposite direction from the bristles. The tuft and concavity of the bristles (so far as they go) are an improvement over bristles which are at right angles to the handle. This allows the posterior portion of the molars as well as the spaces between the teeth to be reached when the brush is properly used.

With the proper use of such a brush three times a day, and floss silk twice a day, any person of ordinary intelligence, after being instructed, can keep the teeth clean. There can be no question but that if the gums be well stimulated and an antiseptic wash used, pyorrhea will never appear. Pyorrhea is due either to simple or chronic inflammation of the gums, no matter whether the cause be local or constitutional. Both simple and chronic inflammation may be reduced, first by blood-letting, to relieve the congestion, and second, by stimulation of all the parts. This, however, cannot be accomplished with the toothbrushes now in use. The bristles are not only too soft, but they are so close together that when the brush is applied to the tooth, those bristles which come in contact with the teeth prevent the others reaching the gums.

I have given this subject considerable study, the result of which is the following brush, which for the past two years I have had my patients use, and with the greatest satisfaction. It is made similar to the prophylactic, only smaller in every way. Spaces are left at every two rows, so that the teeth will pass in between them and the bristles reach the gums. Between the tuft upon the end and the body of the brush quite a space is left, so that the front teeth, upper and lower, will go between and the tuft reach the gums above, below and posterior to the incisor teeth. Inflammation of the gums starts most frequently at these localities first and is usually in its most severe form, since with the ordinary toothbrush it is more difficult to reach these parts.

It is not an easy matter to find a mouth-wash that will destroy bacteria, and at the same time not become injurious to the mucous membrane. Miller, after repeated experiments, says, "An examination of the above results will soon convince us that there are very few substances at present in the dental materia medica which are available for disinfecting the human mouth." After experimenting with twenty-six different drugs, it was found that with one exception, not one of these drugs would destroy bacteria in less than five minutes, most of them requiring over eight minutes. Out of all the drugs which are used daily, trichlorid of iodin destroyed bacteria in one and one-fourth minutes, saccharin in three-fourths to one minute, benzoic acid in two to two and one-half minutes, salicylic acid in three-fourths to one minute. Of these benzoic acid seems to be the only drug from which a suitable mouth-wash can be made. Listerine and thymol have been favorite mouth-washes in America, but lately a new preparation has become very popular, namely Borolyptol. It is composed of five per cent aceto-boro-glycerid O., two per cent formaldehyd, in combination with the antiseptic constituents of pinus, pumilio, eucalyptus, myrrh, storax, benzoin. Experiments made by able chemists have shown that it is fully as strong and will destroy bacteria as readily as 1-1000 bichlorid of mercury.

I have used borolyptol in my practice for the past year with success, especially in cases of pyorrhea alveolaris, without injury to the mucous membrane. Miller says, "that trichlorid of iodin is decidedly superior to the bichlorid; it is furthermore far less disagreeable than the latter, in fact, not at all disagreeable; it has, however, most unfortunately, an acid reaction, and is therefore not suitable for daily use as a mouth-wash." Nevertheless, in cases of pyorrhea alveolaris after the deposits are removed, I know of nothing better than the officinal preparation of iodin, saturating the gums and pockets throughout three times a week. It acts not only as an astringent, but it prevents putrefactive changes, decomposes sulphurated and phosphorated compounds; it therefore acts as a powerful astringent and will destroy most forms of bacteria. These two drugs, with a faithful application of the toothbrush, are all that is necessary to keep the mouth in a healthy condition. By this method the worst forms of diseased gums and inflamed mucous membrane can be successfully treated.

In regard to tooth-powder, I feel confident that many dentists make a mistake in recommending nothing but soft substances. One writer upon the subject of oral hygiene says, in speaking of a tooth-powder, "It should contain a scouring or polishing agent of the nature of a minutely-divided powder, such as precipitated chalk." I would like to ask how much scouring and polishing can be done with chalk? There is no objection to using the chalk for bulk, but to scour and polish the teeth I prescribe equal parts precipitated chalk and powdered cuttle-fish, carmin to color, orris root and fine sugar to sweeten. This mixture, when rubbed up and put through a No. 60 sieve, makes an excellent powder which may be used two or three times a week.

THE USE OF SOFT FOIL.

By C. C. Chittenden, D.D.S., Madison, Wis. Read at Twenty-Seventh Annual Meeting of Wisconsin State Dental Society, July 20–22, 1897.

Up to less than forty years ago the only form in which gold was used for filling teeth by all the dentists of the world was soft foil. If the foil "stuck together" or acted "stiff," i. e., was not entirely free from what we now know to be "cohesive properties," it was at once condemned as unfit for use and "probably not properly refined." The gold beaters had great difficulty in overcoming this objectionable property and often had their work to do over again because of its presence. The only way fillings were made was on the wedge principle of impacting the soft and ductile foil from wall to wall of a cavity so shaped as to be of a general retaining form.

The plugging instruments used, of all shapes and forms, with whatever kind of points, were always perfectly smooth and polished throughout, with large handles capable of being firmly grasped by the full hand, so that great force and pressure could be brought to bear to "pack" the gold against the cavity walls. The commonest form of gold used was about No. 6 to 10 foil rolled into "rope" form. If the cavity was a molar crown, for instance, it would be shaped with nearly perpendicular walls, no overhangs, and the mouth of the cavity slightly larger than the floor.

The end of the rope was firmly folded over the end of a proper sized plugger and expertly packed and fastened into a convenient angle or notch, the plugger withdrawn and caught into the rope far enough back to bring down the main rope into the cavity beside the end already secured, forming a loop long enough to overhang the depth of the cavity from one-sixteenth to one-eighth of an inch. This was repeated until the circuit of the cavity was made, each fold being firmly packed against the preceding one. Then a plugger as large as admissible, with a flat, smooth end, was forced to the bottom in the center and pressure brought to bear in every direction toward the side walls, firmly forcing the loops standing on end against them. This had the effect of forcing the overhanging ends of the loops over the edges of the cavity. Next a large firm roll or pellet of foil was forced into the central pit, then a smaller wedge-point was forced in beside it, and so long as an opening could be made other and smaller pellets were forced into the general wedge.

When this wedging process was complete, the next step was to condense down the overhanging ends of the loops. This was a very important part of the operation and demanded much skill. First a flat-faced smooth plugger (and all pluggers were smooth) condensed the gold straight on end. This left the marginal gold overlying the wall edges. This marginal surplus was then cunningly coaxed toward the center until, if the proper proportion of overhanging gold had been maintained, a perfect and solid margin resulted. In all this process nothing had been done to mar or tear or in any way disturb the integrity of the heavy soft foil, and there was a solid, impervious filling as a result, without the slightest danger of any flaking or disintegration.

Of course it was thought best if possible to keep things dry during all this time, but if moisture or a flood did break in the operator went right on, after letting the patient "spit out."

It mattered little where the cavity was located. The aim in preparation was to secure walls as firm and strong as possible, which continued of nearly equal proportions throughout the whole circumference of the cavity, so that the wedge fastening was complete. To accomplish this the file was a constant necessity. If the proximate surface of a bicuspid or molar was involved and the cavity encroached on the grinding surface, the V file was freely used until even the wall toward the crown surface was firm enough to be wedged against. This left of course a large space between the teeth, just the opposite of what we are to-day taught to consider correct, i. e., the nearest point of contact with the adjoining tooth was next the cervical border and not near the now-called occlusal surface.

It was noticeable too that the file left its trail of lines along the sides of the V, and there was no engine with sandpaper disks to polish them out, but for some unaccountable reason a large percentage of these soft-foil wedge fillings have stood their ground, and have been seen in many a mouth of the passing generation like the Sphynx calmly surveying a surrounding desert waste.

Another form of using soft gold in these cavities was to fold the foil into ribbons of a width one-third greater than the depth of the cavity and roll this ribbon on a square drill point into cylinders of different sizes and density. These were introduced on end and packed against each other around the walls like the loops spoken of, and the final wedges inserted in the center, then condensing the whole on end.

Now, gentlemen, I have told of all this not to try to convince anybody that it is the best and only way to fill and save teeth, but to call attention to a property in gold that I feel is not given enough attention to-day in college training, where young men are supposed to be fully prepared and equipped to do all things required of them in the best and wisest way. Soft gold is susceptible of being brought into perfect contact and adaptation to the side and floor walls of proximate cavities of molars and bicuspids by the wedging process and the burnisher—*more* perfect contact with far less danger of injury to delicate and frail margins of such cavities than the harder and less plastic cohesive forms of gold in general use. With the latter the mallet is almost indispensable, and in many cases the result of its use is to check, mar and even pulverize the enamel border, thus, although not visible to the naked eye, insuring certain ultimate failure of the operation. This class of cavities is in my judgment least likely to failure by the use of soft gold for the proximate portion, finished toward the grinding surface with any form of cohesive gold desired.

The two best ways of making such fillings, are: First. Use a band matrix not too closely fitting the walls, and so force and wedge soft foil against the walls and matrix as to cause a surplus or overhanging of gold throughout the proximate borders which, after removal of matrix, must be burnished carefully over the margins and properly finished and polished. Second. Make cylinders of soft foil as before described, one-fourth to one-third longer than the lateral depth of the cavity, and so place and wedge them against the floor and walls that their overhanging ends extend into the space, there to be later burnished against and over the enamel margins. It is the simplest matter in the world to complete these operations with cohesive gold, beginning at any point from which forward it is desirable to have a hard welded surface for mastication.

Do not understand me to claim that this is the only successful method of making these operations, but it is certain that if this general method of adapting gold to proximal margins be thoroughly and intelligently pursued, a permanent success is more likely to result than where indiscriminate and unmerciful mallet-pounding is used to adapt stiff and hard cohesive gold to frail enamel margins.

Discussion. Dr. R. G. Richter: I always use soft foil in proximal cavities, because the edges can be burnished over so nicely. I have seen fillings that have stood the test of time, while fillings in the same mouth made with cohesive foil failed simply because of the breaking down of the enamel rods from the force used in condensing.

Dr. R. Maercklein: Cohesive foil may be just as soft as non-cohesive. The difference is, that the latter will not cohere, while the former will stick just where it is placed. If you could key non-cohesive foil there would be no necessity of finishing off the filling with cohesive. If you put enough pressure on it the non-cohesive spreads out like tin foil, and will pack it about the same as tin foil —simply wedge it in.

Dr. B. G. Maercklein: There is a good reason why the work done by the older practitioners stood the test of time better than that performed by the dentists of the present day. The former class were skilled. They had trained their hands and eyes to a degree of perfection seldom reached by the present generation of dentists. And why? Because they had to. With the newer appliances and improvements, such as rubber dam, dental engines, mallets and cohesive gold, have come into the profession a line of inferior skill and deficient development in manipulative ability. The cause of one-half the failures to-day is not the material but the manner in which it is used.

Explained.—He—"They say iron enters largely into the composition of the human system." She—"I suppose that is the reason a man loses his temper when he gets hot."—*Truth.*

Two-fold Effect of Alcohol on the Muscles.—H. Frey's communication on this subject is based on numerous and comprehensive experiments and tests, principally with Mosso's ergograph. He found that alcohol stimulated fatigued muscles to an increased amount of work, but produced the opposite effect on nonfatigued muscles. It also deadens the sensation of fatigue. He explains its two-fold action as: 1, a paralyzing action (central) deadening the sensation of fatigue, and (peripheral) diminishing the work accomplished by the muscles; 2, a nutritive effect, supplying new fuel to fatigued muscles.—*Deutsche Med. Woch., Aug. 19.*

Photo-Micrography—The following is perhaps the most simple method of doing what is required. Take a smoothly-planed board about 3 feet by 6 inches by ¾-inch, and straight down the center thereof cut a slot about 2 feet long by ½-inch wide, and lastly, affix on the under side, at each extreme end, a fillet about 1½ inches wide by ¾-inch thick to strengthen the board and raise it slightly from the surface on which it is to stand, level and firm. As the camera to be used extends only 9 inches, a box-like extension piece—adding, say, an extra 4 inches—should be made and fitted to the front. The camera is secured to one end of the board by means of a usual tripod screw passed from beneath through the long slot, and the microscope is so placed, turned horizontally on its stand, that the eye-piece points centrally through the usual lens *mount* into the camera, the junction between the two being made light-tight by a small velvet sleeve having elastic bands at each end. The ordinary focusing-screen is utterly useless for micrographic work, it being necessary to use a piece of thin patent plate-glass, having lines ruled on one side with a diamond. Correct focus is obtained when these lines and the image are seen in focus together through a compound focusser. The condenser and lamp (if the last is used) are, of course, arranged at the other end of the board opposite the microscope and camera.—*Am. Microscopical Jour.*

Digests.

THE MOUTH IS THE VIA NATURA FOR THE ENTRANCE OF DISEASE. By M. V. Ball, M.D. Read before Odontological Society of Pennsylvania, March 13, 1897. When we examine the contents of our handkerchiefs we find that a considerable amount of foreign material has been ensnared, so to speak, in the meshes of the lining membrane of the nose, and so prevented from gaining access to the lungs.

But in the mouth no such arrangement exists. We swallow the air with our food, with the water we drink, and every time we use our vocal organs. But not only from the air is disease—microbic disease—contracted. In the water and in the food itself many forms of infectious organisms reside, and under proper conditions develop disease. Again, the teeth, liable to indentation and decay from use or neglect, are in such a state, like so many little test-tubes of microbe cultures, ready to inoculate the human body whenever and wherever its natural resistance is lowered. Even when the teeth are sound in every respect the spaces between the teeth become stored with food-remnants, which are liable to undergo putrefaction and act as a source of infection.

Bacteria are, as a rule, not very particular as to the source or quality of their nourishment. A minute quantity of organic material and a little moisture is a suitable culture medium for the majority of microorganisms. The refinements of the laboratory media are for other purposes than mere growth. For instance, gelatin media are useful because of transparency, and because they are readily converted into a fluid or solid state as desired. And so with agar, which is used because it remains solid at a higher temperature than gelatin, and can be used in the incubator for days without liquefying. Only a few of the more important organisms require any particular form of food or special degree of temperature, and even these can and do develop under simpler conditions. The secretions of the body, as urine, milk, blood, and saliva, are very good germ foods and have been artificially employed as such. Thus one can understand why the mouth should be a favorable nidus for the culture of germs, and why so many varieties have been found therein.

The father of microscopy, and one might say of bacteriology—Antoon van Leeuwenhoek—in 1683 contributed a paper to the Royal

Society of London, describing a form of microorganism that he discovered in the scrapings from between the teeth. We can readily understand why all of the varieties of bacteria commonly found in the air, food and drink should be found in the mouth. And so various observers since Leeuwenhoek's time have isolated organisms from this location and given them special names. Miller, whose work is classic, has cultivated twenty-five varieties. Biondi in 1887 described five species of pathogenic bacteria in the saliva alone. But besides the ordinary bacteria which accidentally gain entrance to the mouth, a few varieties have been discovered which seem to be normally present and have their residence in and about the teeth. These have been considered as the active agents in producing dental caries and other diseases of the teeth. Recognizing the fact that bacteria of a disease-producing nature are constantly present in the mouth, it is easy to understand that when the mouth is injured systemic infection readily occurs.

Thus the eruption of teeth in an infant is very often accompanied by severe general disturbances—meningitis, pneumonia, convulsions, diarrhea, and simple fever. While many writers are disposed to speak lightly of the process of teething, my own experience agrees with that of many older writers, that the complications occurring during teething are serious and directly due to the eruption. The gums are sensitive, inflamed, and in condition to allow the bacteria ordinarily present in the mouth to gain access to the finer capillaries. A general infection results, and we have perhaps only a mild form of septicemia—fever, diarrhea, etc.; or we have a specific disease, like tubercular meningitis or pneumonia. The bacteria of pneumonia are very common residents of the mouths of otherwise healthy individuals. In uncleanly people and those who fondle the child by kissing the contagion is easily conveyed. The eruptions on the skin, the nasal and aural catarrhs, and the stomach troubles which occur during dentition can all be considered as symptoms of one disease—septicemia.

We are frequently called to treat abscesses in the gums and cheeks, apparently arising from carious teeth. The teeth themselves are not at fault; it is the wound or injury made in the gum by a sharp piece of food, or perhaps inflammation started by the irritation of putrefactive material, that allows the pus-germs to make their way into the tissues. Here, finding a suitable soil, they speedily develop, forming gaseous abscesses and, consequent thereon, general constitutional disturbances.

There are a number of local diseases of the mouth dependent largely on disease-germs. Stomatitis, while somewhat dependent on bacteria for its production, is, however, often caused by other agents and helps to produce a bacterial infection. Thrush, the first disease found to originate from a vegetable parasite, first described in this light by Berg, of Stockholm, in 1846, is a not rare occupant of the mouth. Glanders is caused by a bacillus—bacillus mallei. Leprosy is caused by the lepra bacillus. Actinomycosis, by the fungus of that disease—actinomyces. Gonorrhea of the mouth has been noted.

Tubercular lesions of the mouth, strange to say, rarely occur. The sputum and bronchial discharge, charged with tubercle bacilli, while known to affect the stomach mucous membrane and very often the larynx, does not act on the mucous membrane of the mouth. The sputum has been known to be germicidal for some species. Diphtheria bacilli, for instance, are destroyed in forty-eight hours by sputum, but pneumonia bacteria thrive in it.

There are a number of diseases of the teeth themselves which are supposed to lead to serious trouble in the maxillary bones; as, for instance, various inflammations of the pulp and cement. A number of investigators seem to find specific germs which cause dental caries. As early as 1867 Leber and Rottenstein made public the theory that leptothrix penetrated the dental canal, dilating it, and in connection with acid destroyed the substance. It was thought that the sound enamel could be entered by the bacteria, but Miller proved that this was impossible and that the germ first produced an acid, which, by softening the tissue at some point, allowed the bacteria to enter. Ordinary mouth-fermentations produce sufficient lactic acid to act on the teeth. This fermentation itself is the result of acid-producing bacteria which are constantly present in the mouth. There is no organism that can be said to produce dental caries. Any acid-forming germ—and there are many varieties—can give the first injury, and once the enamel is attacked, caries is certain to follow. The affected tissue then becomes filled with cultures of bacteria, and six species have been isolated from the dentin by Gallipe and Vignal.

It seems more reasonable to suppose that dental caries, like decay of many other tissues, can occur under the influence of pus-forming organisms of various kinds. The ordinary pus-germs are constantly present in the air, and therefore found very often in the mouth. Miller found the sputum of one hundred and eleven students fatal to mice in one hundred and one cases, and septicemia was produced in nearly all the animals.

The dental caries in itself serves as a focus of disease. Glandular enlargement, especially of the neighboring lymphatic glands, is usually present. The wound, for such it really is, is in constant danger of infection by any of the more dangerous organisms that accidentally find lodgment in the mouth. It is not unlikely that diseases like acute rheumatism, endocarditis, meningitis, and even tuberculosis might arise through this entry. By rubbing vigorously a culture of the stapyhlococcus pyogenes aureus into his healthy arm one experimenter caused a number of boils to appear.

A local tuberculosis has resulted on the fingers of persons handling consumptives, when such fingers were injured. The ordinary scrofulitic swellings of the cervical glands, which are so common in children, are to-day believed to be tubercular—local tuberculosis. Caries of the teeth, allowing the tubercular bacillus of the streets and of the food to gain entrance into the exposed lymph-channels, can thus cause the infection of neighboring glands.

Acute rheumatism, while not known to be dependent on a specific organism, is, however, so intimately associated with endocarditis, which itself is so often caused by the pneumonia bacteria, that it is not too far out of the way to consider rheumatism as probably of microbic origin.

There are probably predisposing causes, but the entrance of germs through the defective teeth is not to be overlooked. I have mentioned dentition as a condition during which the infant is peculiarly susceptible to microbic diseases. Convulsions are probably due to a sudden intoxication by the product of some virulent organism, the onset and termination are so much like acute toxemia.

Although in typhoid fever the tongue and teeth are very much affected by the accumulations on them, commonly known as sordes, yet the abscesses which often arise during convalescence originate probably through the intestinal lesions and not from the mouth.

Of course, any foreign agency which injures the membrane, as plates, artificial teeth, and so forth, establishes the same conditions for the entrance of disease as before considered. And the extraction of teeth is a surgical operation open to all the dangers of infection as much as any other operation. Until the wound made is healed, it should receive the same careful consideration as any other wound artificially produced in the mouth. Not only is it an open wound, but it is a wound continually exposed to the worst sort of infection. —*International Dental Journal, Nov. 1897.*

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REPRODUCTION OF GUM TISSUE. By George T. Carpenter, M.D., D.D.S., Chicago. Read before Chicago Dental Society, October, 1897. What can be done for receding gums? This is answered very quickly by a great many operators, that we can do little to restore this lost tissue; and in my judgment the trouble has been that very little experimental work has been done in this direction, and the literature is nearly silent on the subject. A review of seventeen years shows three articles on sponge grafting and one on the use of resorcin in cases of receded gums.

It is not my purpose in this paper to give the etiology of receding gums, but I would suggest that the receding process be checked and the gum tissue returned to a condition of health before any attempt at reproduction be commenced. All dental operators have seen large proximal and buccal cavities of decay filled with gum tissue, sometimes very vascular, but in other cases this tissue will be found firm and healthy. Ill-fitting plates will sometimes cause a growth of gum tissue. Deposits on the necks of teeth just under the gum margin will in rare cases cause an extra gum development. A lady who was waiting for a friend in my office, called my attention to a full upper plate which she wore. The plate was of rubber and was broken into halves between the central incisors, and in this condition had been worn with comfort for over two years. The gum and mucous membrane of the palate presented a ridge, a section of which would make an inverted T, which extended from the centrals to a line near the soft palate. The membrane was in a fairly healthy condition. The condition of things formed a basis for some experiments. I found that the sharp irregular edges of the cavities or edges of the plate caused the irritation, and the overhanging walls acted as a protection for the new growth. (I do not tell this as new.)

After some thought and work along this line, I was convinced that if the same conditions could be brought about where gum tissue was deficient, that the tissue would be reproduced; but how to do it was the query. Irritation to cause granulations and protection to prevent their displacement or destruction. Chemical irritants of various kinds were used and their action on the tissue closely watched. Mechanical irritation was also tried, among which was the lancet and the use of barbed or roughened wire, also sharp or irregular edges of different metals inserted in various ways, producing either internal or external irritation of the gums? The manner of protecting the parts was also a study. Several different varnishes were used, also chemicals that formed combinations with the surface of the tissue, producing a film as a protection for the deeper-seated parts. I also used mechanical devices of different forms and materials, many of which were found worthless.

In order to be successful much depends upon the physical and mental condition of the patient, who must thoroughly appreciate the need of the tissues to be reproduced and be willing to cooperate with the dentist and carry out in detail all instructions. Protection of the parts may be secured by a vulcanite rubber hood, which, if carefully made and adjusted, can be worn with comfort. To make the hood, an impression should be taken of the receded gum with modeling compound, taking first only one side, cool the compound and then take the other side, letting the soft compound extend over the hard, remove, place in position and make a model of plaster. I then restore on the model with plaster or wax the absent gum, building as high or a little higher than the surrounding gum. A sheet of thin wax is then slightly warmed and pressed upon the newly built part, letting the wax extend to the surrounding gum and a little distance upon and between the teeth. This may be flasked, packed and vulcanized. Either the vellum rubber or the ordinary vulcanite rubber can be used, as the case may indicate. Platina plate or wire may be vulcanized in the rubber so as to extend between the teeth, and bent so as to hold the rubber hood in position, or ordinary rubber bands may be vulcanized in the rubber so as to be stretched over the teeth for support, or it can be kept in position by silk or wire ligature. Rubber made in this way will form an excellent protection to the parts to be operated on. Tincture of iodin should be used upon the gums until a firm rounded margin is obtained. The irritation is produced just under the gum margin by a clamp made of thin clasp metal, armed with a sharp edge standing at right angles and made of the length and shape to produce the irritation where required. This instrument will hug the root tightly and will keep in position. After adjusting the clamp, the parts are then stimulated with a solution of nitrate of silver ʒi to distilled water ℥i. The rubber hood should now be placed in position and the condition watched from time to time. Granulations can be observed and the growth of gum tissue noted. This is my method of reproducing gum tissue, but I do not claim the results will be the same in all cases. You will find cases where the gum could be extended to the grinding surface or cutting edge of the teeth.

There is another condition which I would call atrophy of the gums. The gums are pale and very thin at their margins, there is an absence of the alveolus, and in some cases V-shaped exposures of the root almost to the apex. Treatment: After all deposits are removed the gums are painted lightly with tincture of iodin every second day, also stimulated at intervals with a solution of nitrate of silver, until the festoon becomes rounded and healthy. In case of the V-shaped exposure, a hood should be made as described above, and after the parts are carefully cleansed antiseptically, the margins should be carefully pared and an incision made on either side, passing down close to the periosteum so as to make two flaps which can be brought together with a stitch, using a very fine needle and a silk ligature. When the edges are made to approximate, flood the parts with nitrate of silver ʒss to the ℥i of distilled water and place the rubber hood in position. Watch carefully for a few days and remove silk as soon as tissues unite. If there is any tendency to gap, touch the edge with crystal nitrate of silver.—*Dental Review*, *Nov. 1897.*

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REPORT OF A CASE OF CARCINOMA OF THE BUCCAL MUCOUS MEMBRANE. By Geo. J. Dennis, M.D., D.D.S., Chicago. Read before Chicago Odontographic Society, Oct. 1897. In presenting a report of a cancer of the cheek, it is not with the idea of presenting anything new or unusual, but because of the interest of the case to the writer, and because he believes that a description of the case and the operation for the removal of the tumor will be of interest to the members of this society.

The report is as follows: Mr. R., age fifty-four. Family history, negative. Personal history: Habits—Uses tobacco moderately, smokes occasionally, chews on the left side, and drinks alcoholics very moderately. Previous diseases: The usual diseases of childhood—scarlet fever, measles, etc., and one attack of pneumonia; otherwise has always been well. Present illness: Began three and one-half months before the operation, in the form of a small swelling in the middle of the right buccal mucous membrane. It grew rapidly with little pain and soon ulcerated. The odor from the mouth increased as the growth increased. During the last few weeks the patient noticed a swelling under the lower jaw.

Examination. In the right side of the mouth a tumor, about three-quarters of an inch below the opening of Steno's duct, of the size of a silver dollar, extending downward and involving the mucous membrane of the inferior maxilla. The surface was ulcerated, the edges indurated and irregular. Under the right inferior maxilla several glands, one of which was the submaxillary lymph gland, were palpated. The cervical glands were not enlarged. Glands on the opposite side were not enlarged. Submental glands were also negative. Of the teeth, the second bicuspid, first and second molars were missing, the others in good condition. Physical examination, negative; the patient somewhat cachectic. Urine negative. A specimen was removed from the border of the tumor and hardened in alcohol, formalin and water for six days, mounted, sections cut and stained. The microscopic examination revealed an alveolar carcinoma.

Preparation for operation. Consisted of mouthwash for one week of a saturated solution of boric acid; on the day before the operation the patient was scrubbed, washed and shaved about neck and face, a wet boric acid dressing applied and only liquid food permitted.

The operation. Anesthetic, chloroform during the early stages, followed by ether, with a return to chloroform at the close. To avoid paralysis of the facial nerve, the lower lip was split in the median line between two Billroth forceps to the lower edge of the chin by means of scissors, and the incision carried on a line parallel with the lower border of the jaw to a point about three-quarters of an inch from the mastoid process. The hemorrhage was arrested by tying the facial artery, veins and branches. The side of the cheek was then lifted, and the tumor and neighboring tissue, three and one-half by two inches, removed, the incision being carried about three-fourths of an inch outside of the mass and as high as Steno's duct. The third molar, first bicuspid and cuspid were extracted, and the mucous membrane of the outer portion of the jaw and the alveolar process were removed. The hemorrhage from the jaw was stopped by means of the Paquelin cautery. The submaxillary lymph and salivary glands, as well as all the other submaxillary glands were then removed, because adherent. The submental glands were searched for, but none were found. These are not always present (Henle).

A measure of the denuded surface was then taken with gutta-percha tissue, and a flap was dissected from the neck and infraclavicular region, leaving a pedicle sufficient for nutrition of the detached skin. After this the flap was carried up and stitched into the denuded area of the cheek. The cheek was then brought forward to place and the first incision through the lip and along the jaw was closed by interrupted sutures, except that portion through which the flap from the chest was carried. Retention sutures were applied to the denuded area over the chest to diminish the wound as much as possible and the remaining uncovered surface received a covering of iodoform gauze. The wound was now dressed aseptically, with the head drawn toward the right shoulder to lessen the tension on the flap. The dressings were changed frequently because of the passage of secretions from the mouth between the flap and the jaw.

Twelve days later the flap from the chest was incised from its pedicle near the opening into the mouth and returned to its place on the chest; the separated portion was carried inside of the mouth and sutured to the mucous membrane at the side of the tongue, and the original opening along the jaw, which had been only partially closed, was now completely closed. The remaining uncovered surface of the chest was filled in with Thierch skin grafts.

It is due to Dr. Schroeder, who perfected the operation, to state that another operation for the removal of the cervical glands will take place in order that metastatic growths in other parts of the body may be prevented.—*Dental Review, Nov. 1897.*

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HYDRONAPHTHOL—WITH SUGGESTIONS FOR ITS USE IN THE TREATMENT OF THE DENTAL PULP, ALIVE OR DEAD. By Sidney S. Stowell, D.D.S., Pittsfield, Mass. Read before the First District Dental Society of the State of New York, March 9, 1897. That I have discovered the elixir of life I do not claim, for it is appointed unto all men, and some teeth, once to die. But there is a balm in Gilead, and it is that which I have brought you; its name is "hydronaphthol." The makers state as follows: "Hydronaphthol is a perfectly harmless, odorless, non-poisonous, non-corrosive, antiseptic, germicide, preservative, anti-ferment, and disinfectant. Its name indicates a descriptive fancy word which is used to designate a certain secondary compound derived from beta-naphthol by reaction which changes its molecular constitution by means of inorganic compounds that do not enter the molecule, and are finally removed, whereby ninety per cent of a product is obtained, melting at 116° F."

Hydronaphthol is soluble in the following proportions: In alcohol, about 1 to 2 parts; in hot water, about 1 to 300 parts; in cold water, about 1 to 1100 parts; in olive oil, about 1 to 20 parts; in ether, about 1 to 2 parts; in chloroform, about 1 to 2 parts. It is also freely soluble in benzol and the fixed oils. Alkaline solutions dissolve it readily, but greatly reduce its antiseptic properties.

Hydronaphthol possesses one-fifth the antiseptic strength of mercury-bichlorid, double the strength of beta-naphthol and iodoform, three times the strength of salicylic acid, and about fourteen times the strength of carbolic acid. Unlike all these antiseptics it is absolutely non-poisonous, and can be used with perfect impunity as a preservative in cases where no other antiseptic could be used at all. It is claimed that a solution of one to ten thousand will prevent fermentation, but, to arrest the action of putrefactive germs already formed, stronger solutions are necessary.

Whatever hydronaphthol may be, scientific chemical experts have shown that *it is not* beta-naphthol, and medical experts are satisfied that it is a product which produces a physiological action in which all the disadvantages arising from the use of other hydro compounds of naphthalin are entirely removed. Thorough and exhaustive tests and experiments by painstaking, scientific investigators in hospital and private practice have established its claim to a prominent and permanent place in the field of antiseptics, because in surgical dressings it is sufficiently soluble to effect thorough antisepsis of the wound discharge, and sufficiently insoluble not to be readily washed away from the dressing by the discharge. It is non-toxic, and may be given in three-grain doses as an intestinal antiseptic in cases of typhoid fever and cholera. Leading American and English physicians have published statements to this effect. In germicidal powers it ranks second to mercury-bichlorid, but being non-poisonous, non-corrosive, and harmless, it is preferable to that substance not only in surgical practice, but in the arts also as a preventive of fermentation, etc. It preserves anatomical and pathological specimens in their natural condition, preventing shrinkage or decay.

A. B. Griffiths, Ph.D., F.R.S.E., F.C.S., in his "Researches on Microorganisms," writes, "Hydronaphthol is of great value as an antiseptic agent in surgical operations, etc. A solution one to eleven hundred destroys bacillus subtilis, micrococcus tetragenus, micrococcus prodigiosus, bacillus anthracis and its spores, sarcina lutea, and other microbes, for they cannot be cultivated after its action." * * * Dr. J. C. McCoy, New York, writes, "After a daily use of hydronaphthol as an antiseptic and disinfectant for several years, I consider it preeminent as a dental antiseptic and disinfectant, and for practical purposes it will supersede all other antiseptics in the practice of dental surgery." * * * Dr. C. A. Meeker, Newark, N. J., writes, "I am greatly pleased with the antiseptic properties of hydronaphthol. I believe them to be far higher than carbolic acid and other antiseptics, and the fact of its being non-poisonous is a great factor in favor of its use in general dental practice. I have used it for several years and shall so continue." * * * Alex. Edington, M.B., C.M., Edinburgh, writes at length of his experiments with hydronaphthol in hospital surgery and private practice, comparing its efficiency with carbolic acid, claiming great superiority for hydronaphthol, and concludes by saying, "there can be no doubt of the fact that in this agent we have an ideal antiseptic, and a solution of one in three hundred in warm water possesses very great germicidal power, and such will be found of the greatest service in washing out septic cavities and wounds." * * * Dr. John I. Hart, New York, writes to me, "I have used hydronaphthol, saturated solution in alcohol, in root-canals; also mixed in equal parts with zinc oxid, then with zinc chlorid as a permanent root-filler; also mixed with zinc oxid and creosote or oil of cloves, placing the paste thus formed over a layer of dentin too close to the pulp to remove, and over this paste flowing oxyphosphate cement, also with tannin and glycerol in pyorrhea-pockets."

That I might prove it well I have used the drug constantly for more than five years to the exclusion of nearly every other antiseptic agent, and with such phenomenal success that I deem it my duty to the profession which I represent, and to humanity at large, that I present its merits here. I use hydronaphthol principally in two forms, the twenty-five per cent alcoholic solution and the powdered form. In all cases where an antiseptic solution is required in dentistry I use the alcoholic solution, often reducing it with glycerol or water as the case may require. In the treatment of a putrescent pulp-canal, the penetrating property of the alcohol and its affinity for moisture carries it laden with its hydronaphthol in solution to the remotest nook and corner of the pulp-chamber and canals however small, even to the apex and through into the soft tissues, as well as into the tubuli of the tooth. The alcohol having thus penetrated every part it at once evaporates, leaving the hydronaphthol to do its perfect work of disinfection.

We all know with what fear and dread we have opened into a pulpless tooth of long standing, having no open fistula, and what dire results have followed, supposed to be the result of a multitude of hungry microbes rushing into a fertile field. An inflammation is at once set up which is almost unbearable, the quickening pulse and rapid breathing soon indicate a high fever, and often for two or three days or a week the patient, whether a robust man or a delicate woman, will be confined to the bed in a dark room, there to writhe in agony until suppuration of the inflamed part takes place and the pus burrows its painful path through the plate of bone and soft tissues, and finally breaks and discharges. In the meantime the physician and dentist have been in almost constant attendance, using all the known remedies for such cases, and neither doctors nor medicines have really done any good, other than to encourage and speak good cheer to the suffering martyr that for all this agony he will still retain the tooth, that it may yet become useful. We have all been through this experience, either personally or with our patients, and all have realized how powerless we were with all our drugs to relieve our patient's suffering. Gentlemen, I make the statement here that when an old pulpless tooth is opened into, if the alcoholic solution of hydronaphthol is at once placed in the pulp-canal, the conditions referred to are *absolutely impossible.*

I will now refer to another use of hydronaphthol which I have found of priceless value, and so far as my research has extended I may claim originality. I refer to the combination of the powdered hydronaphthol with the zinc oxid of our common oxyphosphate cement. I combine in parts one-quarter of hydronaphthol to three-quarters zinc oxid, mixing this combination with the phosphoric acid, and using as any oxyphosphate cement for pulp-capping and for protecting permanently all exposed, sensitive or soft parts in live teeth as an antiseptic, non-irritating lining for all classes of fillings. I first bathe the cavity with the alcoholic solution, which penetrates the soft, leathery decay as well as the tooth-structure; the alcohol soon evaporates, leaving a deposit of hydronaphthol in the cavity. I now either line the cavity or fill it entirely with the hydronaphthol cement, which is rendered non-irritant and antiseptic by the presence of the hydronaphthol incorporated into it. I sometimes incorporate a little oil of cloves or carbolic acid with this cement, which acts favorably as a local anesthetic; with this addition the foregoing treatment may be applied to a tooth with a pulp slightly or nearly exposed, which has ached some or may be aching at the time of presentment, with almost positive assurance of successful results and without pain to the patient, who should be instructed to call again in a few months for a more permanent filling, when the tooth will be found to be quite free from sensitiveness; the cavity may now be more thoroughly prepared and a more permanent filling placed in it, lining the cavity again with the combination cement. If, however, the cement is not badly worn, it may be left for a much longer time with still better results.

The addition of hydronaphthol to the cement in the proportion mentioned reduces its wearing quality but slightly if it is mixed hard, but as we use the cement quite soft in the treatment of such cases, its wearing quality is of course impaired. Now whatever of moisture may remain in the soft decay or in the tooth structure, or may be secreted by the pulp (there being no such thing as a permanently dry tooth in the mouth), on coming in contact with and acting upon the cement-lining, immediately sets free more hydronaphthol which at once acts to keep the parts in a thoroughly antiseptic condition, while good old Dame Nature, ever ready and willing to heal and restore her diseased and lost parts when given an opportunity, goes quietly and peacefully on with her perfect work of recalcification of the affected tooth.

I will say that the results thus obtained have been little short of marvelous, as I have taken liberties with hypersensitive and soft teeth by leaving the soft sensitive decay undisturbed in the cavity, treating it as before mentioned to the delight and comfort of my patient, and assurance to myself that I have put natnre at her best to restore the affected part to a healthy and normal condition, less the part lost by the first attack of the deadly microbe. I make the claim, and in good faith, that by this treatment in general practice I will save more teeth with living healthy pulps and with vastly greater comfort to my patient than anyone else can do by thorough excavating, as suggested by Dr. Ottolengui in his recent discussion of Dr. Williams' paper. I make still further use of hydronaphthol by combining it with the zinc oxychlorid, in the same proportion as with the oxyphosphate cement, as a permanent root-canal and pulp-chamber filler; especially is it valuable in this form where we are not sure that we have thoroughly cleansed the canals, as is very often the case with molar teeth when a "mummifying" agent is required.—*Dental Cosmos, Nov. 1897.*

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REPORT OF A CASE VERIFYING THE STATEMENT FIRST MADE BY DR. M. H. CRYER, SHOWING DIRECT COMMUNICATION OF THE FRONTAL SINUS WITH THE ANTRUM OF HIGHMORE. By T. W. Brophy, M.D., D.D.S., Chicago. Read at American Dental Association, August, 1897. The superior right bicuspid and molar teeth had been removed and a small opening made into the antrum before the case came into the hands of Dr. Brophy, irrigation being carried in by syringing daily with the usual antiseptic solutions. No satisfactory progress being made in arresting the disease, the patient was taken to Dr. B. for diagnosis. Exploration by means of a silver probe revealed no diseased bone, and a more extensive opening and also a more thorough drainage was recommended. The patient seemed at first to improve after the operation, but after home treatment for two or three months returned in the original condition. It was then decided to remove a greater portion of the anterior wall of the antrum. The operation revealed a thickening of the mucous membrane with polypi upon its surface, besides a small piece of rubber tubing which had been lost in the cavity. The cavity was thoroughly curetted, packed with boracic gauze, the packing was removed daily for about a week, when a hard rubber canula was made retaining full size of opening, preventing closing of opening by granulations and enabling to thoroughly irrigate the cavity and watch the process of repair.

The accumulation of pus persisted at the upper nasal surface of the cavity, and after two or three months of the most vigorous treatment, it was decided that the frontal sinus must be involved. Accordingly an operation was made opening the sinus, which was found to be filled with pus. The anterior wall of the frontal sinus was removed, exposing the cavity to view, when it was found to be denuded of membrane. By carrying the incision downward along the inner canthus of the eye a silver probe was passed directly into the cavity of the antrum without obstruction. Water was forced into the frontal sinus, which readily found its way through into the antral cavity. Pus also dribbled from the region of the ethmoid cells. These cells were curetted, some diseased bone removed, and the whole thoroughly irrigated. Irrigation and antiseptic dressings, together with the insertion of a drainage tube, completed the operation, suppuration finally ceasing, though a thick glossy mucus occasionally comes from the nasal cavity. This case, in the judgment of the writer, had its origin in a dental alveolar abscess of the teeth which had been removed before the patient came to him. The cure of cases of this character could not possibly be effected by opening and treating central cavity alone. * * * The feature especially presented was the anatomical relation of frontal sinus, infundibulum and antrum of Highmore.—*Ohio Dental Journal, Oct. 1897.*

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STRUCTURAL DEVELOPMENT. By C. N. Peirce, D.D.S., Philadelphia. Read at American Dental Association, Aug., 1897. In connection with Section VII, Dr. W. C. Barrett, chairman, placed on exhibition an immense collection of human and comparative odontology, which Dr. Peirce described as presenting an array of landmarks rarely seen in a meeting or an association of professional individuals, unless of a strictly scientific character. He said: Each one of these representations has a history, and from each one, the nearest akin but more complex, has derived some organ, trait or peculiarity essential to his being, and this is true from the most simple to the most complex—from the Batrachian to Man. The organs which are held in common indicate the road that has been traveled from the most primitive to the most highly specialized. The general plan of construction was a unit; the divergencies in response to the necessity of adaptation to environment, intensified by inheritance. It is a recognized fact that any change in the circumstances, that is, in the sum total of influences affecting any organism, will be likely to work some alteration in that organism or in its descendants, or in both.

The teeth are of more interest to the dental profession than any other set of organs considered separately, and yet these organs subserving nutrition cannot be studied without a marked correspondence with organs being noted. A suggestive query is, "Are the teeth, with other organs of living beings, adaptive or non-adaptive? Are they machines especially fitted to meet the demands of their environment, or are they not?" The question, "Did the occasion for its use follow the appearance of the structure, or did the need for the structure precede its appearance?" is answered in the words of the late Professor Cope, "Animals and plants are dependent for existence on their environment;" "Changes in environment occur without any preparation for them on the part of living things." "The influence of environment is brought to bear on life as it is or has been and special adaptations to it on their part must follow, not precede, changes of climate, topography, population, etc." Another consideration is the well-known and recognized influence of use, motion, on nutrition—the law of use and effort—kinetogenesis.

In the study of the teeth it is not difficult to recognize that there are certain central or primitive types, from which it is easy to derive other related forms of detention by simple addition, subtraction or modification of parts already possessed. The so-called teeth of the invertebrates are enderonic in origin—an oral armature with nothing in common with the teeth of vertebrates except their similar functions. The teeth of the vertebrates are enderonic in origin, in shape and function ranging from a simple cone for seizing and retaining, to the incisors for cutting, cuspids and carniverous molars for tearing or lacerating, and tubercular for crushing, and the complex grinding molar of the omniverous and herbiverous for the trituration of food.—*Ohio Dental Journal, Oct. 1897.*

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CLINICAL REPORT ON METHOD OF OPERATION. By Dr. H. C. Register, Philadelphia. Before Academy of Stomatology, March 23, 1897. Individual methods of operating are of minor importance if they do not possess a qualifying reason why they are so done, embodying a "principle" that applies in all like conditions. That which is involved, as a principle, in the manipulation of gold as performed by myself on Saturday last, consists in adapting gold in regulated lamina, in opposition to an irregular form of cohesive work, and the fixation by forcing it to place by strips of bibulous paper or old soft linen, thus making a tight joint by packing the gold to every point of contact by the same effort, in opposition to retainers, cohesive and otherwise, which when done by instrument points are more likely to let some inequality remain, and also wound the finished tooth tissue, which is detrimental to the saving quality of the filling so far as it makes an inequality, thus preventing the hardening of the dentin beneath it.

The calcification of the fibrillæ, I claim, always takes place in forming a zone of secondary tissue in a filled tooth when the mechanical and physical relations are made compatible with each other, to the exclusion of recurring exciting causes of caries. Metal fillings, through their thermal irritation, produce that result sooner than the zinc or gutta-percha. To this end the formation of cavities should conform to the natural cleavage of the enamel, which radiates from the stratum granulosum to the periphery, and, after Williams, are held together by the interprismatic cementing substance. An enamel wall, under the best conditions for its future preservation, should stand in this relation to the filling, the length of the enamel prisms, where possible, reaching from the enamel cuticle to the stratum granulosum, with the surface made smooth. In all cavities thus formed we get, as an anatomical result, a V-shape to a greater or less extent, this being natural as applied to enamel.

In connection with this and all other forms of cavities, I cannot lay too much importance upon the sterilizing and alkaline influence of bathing the cavities with iodin, and decomposing it and all carbohydrates and starchy matter, including germ-life, which is in the main composed of the latter material, and of placing the inner enamel and dentin in an alkaline or neutral condition before filling. The changes in the tissue are as great as apparent, permitting and producing an antithermal change through secondary dentin more quickly, and anticipating the action of germ-life left in the tissues.

The use of a matrix in connection with this method, and all others as well, should stand as a necessity only, in giving expression to the cavity—*never a positive, fixed, artificial wall.*

As the environment of the tooth will be the exciting cause of future caries, the filling must anticipate, so far as possible, the dissolution of the interprismatic cement or the calcoglobulin, as pointed out by Williams, before a recurrence of decay can take place in any part of the filled border properly protected by the gold. To do this best is the aim of all honest operators. I present this method not as one of an hour, a day, or a month, but one that has stood the clinical criticism of fourteen years as a system, with the good work continuing to preserve badly broken-down teeth, as observed from carefully kept charts that tell the conditions then and now.

When one or more of the walls are broken, a matrix becomes a necessity, and here planished copper or german silver works best with me, always fitting it to the individual case. This may be done by soft soldering the ends or using the silk ligature, which I generally prefer, winding it round and round the matrix to its width, which comes to the bulbous portion of the tooth only. To planished copper, which is rendered so pliable and dead by annealing, I give the preference for making all kinds of matrices.

If it is desired to give the filling an oval form or contour at the knuckling point of contact, it is necessary only to hold the copper strip, before cutting, in the palm of the hand or some fairly soft surface and burnish it to the extent required. The ligature takes it to place uniformly throughout the boundary line and leaves a mold to be replaced by the filling.

Gold cylinders, the length of which correspond to the cross-axis of the cavity, are now laid on the bottom and sides and pressed to place by bibulous paper folded once, or as many times as will correspond with the work in hand; and soft linen cut into strips is to be used in like manner without folding, and in its preparation must always be cut, never torn. After the gold has been pressed to place under paper by "plugging pliers" (a special form is best), the ends of the cylinders are *turned over* and *around the cavity, between* the *tooth* and the *matrix*, or the first cylinders may be placed and adapted under the bibulous paper, the edges of these turned over the border of the cavity at the cervix, and the matrix then applied as described, pressing against the cylinders, the operation being continued by the use of mat gold and malleted to place with the paper upon the gold, followed after its removal with proper small, smooth points until all parts of the boundary, as you progress, are filled *without the instrument coming in contact with tooth-structure.* After the enamel has been thus protected, to a greater or less degree, not being so essential as with dentin, the cohesive gold can be added wherever the masticating surface or contour calls for it. In the larger restorations the borders of the filling should be composed of cylinders carefully laid in contact with dentin and enamel throughout the joint contact in lamina. The center or body may be filled with mat or crystal gold, as the air-spaces in the work are in no way detrimental. The time thus gained is all secured by the use of soft gold, it permitting of about two-thirds of the cavity being filled in one-third the time, as a gain over cohesive work.

No special retaining device, as a rule, is necessary, other than a slight irregularity that may naturally exist; otherwise undercuts should be slight, and to see that the pounding and triturating forces of mastication are met by the cylinders being anchored as much within the body of the tooth as extending beyond the cavity, in restoring the contour to any required form.

This method of operating, I believe, is in direct line with the latest discovery in histological research in its relation with the several anatomical parts of tooth-structure, both mechanically and physically related, and as a protection from the microgerm environment. Thus do we find non-cohesive or soft gold laid in lamina in juxtaposition against dentin and enamel, in contradistinction to small pieces being added cohesively in retainers, to be no veneer but of better grain, and being opposite in all its relations as a tooth-preserver, both physically and mechanically.—*International Dental Journal, Oct. 1897.*

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TO DEPOSIT PASTE IN CAVITY. By J. H. Hughes, D.D.S., Goshen, Ind. In capping small exposures, or when putting cement into an excessively sensitive cavity, I am accustomed to use a stiff paste of white oxid of zinc and oil of cloves next the pulp or dentin. I found it difficult to carry this paste to the exact spot and leave it there, owing to its strong inclination to stick to the instrument used in depositing it. Finally I discovered almost by accident that if the paste were made into a little ball it could be carried to the cavity and placed exactly where needed, or spread over the exact amount of surface required, by using a bit of spunk in the pliers, as carrier and spreader; the spunk coming away almost clean, or at most with only a little oil upon it. This is a little point, but it has given me a great amount of satisfaction.—*Dental Review, Oct. 1897.*

USE OF SCREWS. By H. W. Arthur, D. D. S., Pittsburg. Read before Pennsylvania State Dental Society, at Glen Summit, July 6, 1897. Cohesive gold and the control of conditions afforded by the introduction of rubber-dam made possible large restorations of broken-down tooth-structure. The use of screws in dental operations was born of the necessity for greater security for retention in restoring and contouring, and it is to this class that the use of screws is specially applicable. While crowning has taken the place of building up in extreme cases of restoration, the usefulness of screws has not diminished, but has rather increased. By their use foundations may be made for crowns on roots that would otherwise be useless. By the use of small screws, in many cases security of retention can be had where undercuts and grooves would endanger the pulp and throw the strain for retention on structure already greatly weakened. In the minor cases of restoration or contouring where the small screws may be used, the screw does not seem to have had the recognition that it deserves. It may be claimed for it that (if judiciously inserted in those parts of the teeth best able to bear the strain) it gives the maximum retention security with the minimum loss of tooth-structure. The use of the screw, as has been intimated, is in those cases where extra retention security is wanted, and it does not supplant old methods of retention in ordinary cases, though in many it may supplement.

In this model we have assembled a number of typical cases where screws may be used, some where their use would be good practice, and others where their use would be more positively indicated. Taking those where their use would be good practice, we would present first a central incisor with a large cavity on the distal surface; the incisal angle is weak. For filling the cavity as it is, the ordinary methods of retention would be indicated; but if we take into consideration that the incisal angle is liable to fracture, and there may be objections to anticipating this by cutting it away, the resort to the use of screws is certainly good practice, as it will not only afford security for retention as it is, but also in the event of fracture, in which case an additional screw near the incisal edge will give security for retention in restoring the incisal angle.

The upper first bicuspid is another case of this class. The tooth has a filling on the mesial surface extending across the occlusal, including the distal surface. The disto-bucco-occlusal angle is contoured. A screw was placed at the disto-bucco-gingival angle. The lingual surface is broken off, leaving the filling exposed along the entire lingual side. We have here ample space and room for placing two screws, which will give retention security for restoring the lost part and will assist in retaining the first filling.

The lower first bicuspid, together with the second bicuspid and the first molar, show another class of cases where the small screws may be used to advantage. It is noticeable that the occlusion on the first bicuspid distal surface is close, dipping into the cavity space. This might be filled successfully by undercutting, but with less loss of tooth structure, with greater retention security, and with more ease by the use of a screw. The disto-occlusal angle is wanting, so that a screw can be readily placed pointing toward the mesio-lingual angle.

In the lower second bicuspid the mesio-buccal and lingual angles are broken down; the sulci have no faults; the bite is close; there is a broad seat for the filling at the gingival line. The opposite point of retention, by the ordinary methods, would be made by undercutting near the occlusal surface or cutting through that surface into the sulci for anchorage. By the use of a screw anchored in the strong body of sound tooth-structure, as shown, near the occlusal surface, greater security for retention can be had with no weakening of the tooth structure.

The lower first molar is somewhat similar; in this case the strain being greater, a larger screw may be used. Placing it in the body of the tooth, near the occlusal surface, a seat is made for a small screw near the mesio-bucco-gingival angle, and others might be placed. Another in this class of cases where the small screw may be used to advantage is shown by the tooth in the place of the upper second molar; the tooth is an upper third molar. It is in that tooth, in place, that screws may be used as here shown. Screws are placed through cavity, near the disto-gingival line angle, in the dentin.

Where the breaking down of the angles necessitates a resort to contouring, the use of screws is more positively indicated. The point of opposition for wedging in these cases by the ordinary methods is wanting, unless resort is had to deep cutting, which will endanger the pulp, and even then will not afford the security for retention which can be had by the use of screws. We have here in the model several cases of that class.

There are other cases where the use of screws is positively indicated, where retention security cannot be had without them. The upper cuspid is an example of this class. It is worn down about one-half, is perfectly sound; the pulp-chamber is well protected by secondary dentin. In this case, without disturbing the tooth-structure other than for placing screws, perfect retention security can be had. In many cases where access may be had to the pulp-canals, screws of the larger size may be used and supplemented by smaller ones. Where roots are badly broken down, so that the margins are wanting, the use of screws for securing a foundation of amalgam for crowning cannot be overestimated.

The location of screws is a matter of considerable importance. It should be at a point readily approached for inserting both the screw and the filling. It should be as far as possible from the pulp and not too near the margin of the tooth, and consequently at a point where there is the greatest bulk of tooth. In the incisors and cuspids the point that meets these requirements best is the linguo-gingival angle, either mesial or distal. This point should be made accessible by free cutting if need be, as it will not weaken the tooth. With caution screws may be placed at the labial angles. Usually it will require considerable space, but there should be no hesitation about making space, as a little more exposure of gold is a matter of small consequence compared with that of avoiding the pulp and margin and getting the screw fixed. Where there is sufficient space a screw may be placed near the incisal edge in the dentin, otherwise there is a liability of encroaching on the enamel plates or the pulp by placing a screw at this point. In the bicuspid and molars where there is sufficient space (and in many cases it would be good practice to make space), the best point is in the center of the body of the tooth, near the occlusal surface. In many cases we have to be governed by the convenience of approach and the relation of the pulp in selecting the point for placing a screw. Where the course of the pulp-canal is used for placing screws, the shape of the roots and their size should be considered, especially in the posterior teeth, where large screws are used. For cavities in the upper molars the lingual root is the best, as it is the largest and most readily approached. For securing a foundation for crowning it is best to put in two screws. This can be done in bicuspids and in molars by using more than one root. In regard to the use of screws in practice, many no doubt "lose the good they oft might win by failing to attempt," and others by failing in the attempt. It would seem to be a simple operation to place a screw, and yet to be successful care must be taken in each detail, and always especially in placing the small screws.

To avoid confusion care should be taken in the selection of the size of the instruments and screws; and where these are not fixed in sets, they should be tested *always* before using. This confusion can in a great measure be avoided by confining ourselves to the use of two or three sizes of screws; in most cases two will do—the small-size anchor screw, 100 threads to the inch, and a large size about forty-eight threads to the inch. For the anchor screw there is a set of instruments complete that could not well be improved upon, though there may be a choice of these. When no drill is furnished with the tap and carrier it is well to test the drill as to size each time before using. As to the manipulation in the use of the anchor screw, having decided where we will place our screw, we should make sure that the way is clear to direct approach to that point. The first step in the manipulation is to countersink with a small round bur a seat for the filling at the point where the drilled hole is to be. With a "limit drill" in the engine, carry the drill steadily up to the shoulder, and then withdraw quickly while it is revolving; if allowed to stop it may break off in the drill-hole when you attempt to remove it. Take the tap, place it cautiously in the drilled hole, give one or two turns; when it is engaged let it be free, so that it may line up with the drilled hole, repeating this procedure with gentle pressure until the tap is arrested. It must be kept in mind that the instrument is a very delicate one and may break in the hole if not handled with great carefulness.

We prefer the screw-chuck as a carrier, because we can regulate the length of the screw and the screw is held firm, so that in placing it the thread on the wire or in the tooth is not liable to be torn. With the screw in the carrier the procedure should be the same as with the tap, leaving the instrument free after every few turns, that it may be in a line with the drilled and tapped hole. It should be tested by gentle turning to make sure that it is fixed. Then loosen the handle from the shaft first; unscrew the shaft from the anchor screw. A word of caution: the drill and tap being more slender than the chuck-screw carrier, it must be borne in mind when using the former that room must be left for the use of the latter, so that it may not come in contact with the tooth at any point other than the seat of the filling, when the screw is placed or being placed.

The placing of the larger screws in the pulp-canal, while not requiring the same delicacy of manipulation, requires care. Where the roots can be approached directly but little difficulty will be experienced; where they must be approached at an angle, as in the case of the lower second molar in the model here shown, the main difficulty is in making the drill-hole in a line with the course of the canal. The right-angle attachments do not supply the need. An instrument such as we have here is one that can be depended upon; the reach is long enough and yet not too long; the shifting angle is the main advantage to be had in its use. The short finger chucks can be used for tapping and placing the screws. The presentation of our subject—the use of the screw for filling, and especially the use of the anchor screw—is not complete without some reference to the manipulation of the screw in filling. The object in making a seat for the filling, in which the screw is placed, is to give stability to the filling. And this is accomplished by condensing the gold around the base of the screw and following it up until the screw is covered. When we consider the limited amount of surface the screw presents, we can understand how necessary it is to condense the gold well to make it secure. For this reason we would advise the use of small pointed pluggers, straight and contra-curved. Gold should be worked all around the screw from the first, and not wedged in on one side, leaving the other side unsupported. Some object to the use of screws on account of the complications and care necessary in placing and filling, but this has no weight compared with the security and results attained by their use.—*Dent. Cosmos, Oct. 1897.*

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DENTAL EDUCATION. By Dr. Montell. Read at Union Meeting of Maryland State Association, Washington City Society, and Virginia State Association. Dental education is for the purpose of making dentists, and this purpose is what is supposed to animate not only the faculties of the various colleges and the profession, but to render necessary the creation of various governmental supervisors, in the shape of state boards of dental examiners. Dental education may be divided as regards quantity and quality, and under these heads the writer will endeavor to point out what he deems the defects and suggest such remedies as appear feasible.

We will first consider the quantity of education received by students in our institutions, and we will assume, so far as the quantity is concerned, that were the pledges made in the catalogues of dental colleges fulfilled the student would be well grounded when his diploma was granted. But is this the fact? Do we not all know that many of the announcements which look so well on paper are but the buncombe of the demagogue who deludes the people with promises never intended for fulfillment? We find on paper an array of "ologies," the mastery of which would entitle any one man to marked position among the scientists of the day, and yet upon investigation of the facilities of the institutions so advertising we find that they have within their walls neither the facilities for teaching nor the pretense of so doing.

Bacteriology, histology, pathology, and chemistry have become recognized as essential to the education of a dentist in our day, and there seems to be a universal disposition on the part both of the profession and the students to demand such instruction in these branches as will enable them to intelligently pursue the practice of dentistry, and this brings us to the second head of dental education, viz., quality.

Do our colleges generally teach these branches in such shape and manner as are suggested by the special needs and requirements of the dentist, or is not the dental student left to drag from the mass of general knowledge on these various subjects such portion as he may suppose will be useful to him? How much better would it be if these branches were so specialized that the dental student was taught such portions only as had relevancy and bearing upon his specialty alone, than to be compelled to spend many precious hours in laboratories engaged upon general investigations that, while useful, as all knowledge is, cannot repay him in even the smallest degree so well as special knowledge pertaining to his own profession would. As previously stated, the object of dental education is to create dentists, not men whose widely diversified knowledge would simply entitle them to be "Jacks of all trades;" therefore let us not compel our students to waste their money and, what is far more valuable, precious time in acquiring vast stores of disjointed knowledge, having but a remote bearing upon their own chosen specialty. The writer trusts that his views will not be unjustly nor hastily condemned, as he fully appreciates the value of all knowledge; but he does emphatically wish to enter a plea for specialized instruction in such branches of dentistry as are allied to medicine, and he ventures to predict that the day is not far distant when the dental student will demand for himself just such a course of instruction as is herein outlined. It is due to these defects in our system of dental education that it has been found necessary by the profession to establish such a safeguard to its portals as the various state boards of dental examiners, for that supervision so necessary to protect themselves and the public from imposture and incompetency. If it is necessary that a dentist have the same medical knowledge as a general practitioner of that science, then make it a requisite that every matriculant of a dental college obtain first his medical degree; but if, as the writer believes, it is not necessary that he be so instructed, then let such time as he be required to spend in learning the collateral branches be spent upon such portions only of those branches as will assist him to the better understanding of dental science. While dentistry is probably a specialty in medicine, yet it has of its own nature many features independent of that science, though founded more or less upon its principles, and practiced more intelligently through a knowledge of the same. There can be no question that the recognition of these facts has done much to advance the status of dentistry as a profession in the estimation of the masses, but the writer doubts if the results have been the making of better dentists in the practical every-day work of the profession, except in so far as the increased curriculum has demanded of the dental student a higher grade of preliminary education to enable him to comprehend and master the details of the new branches added to his former studies; and while these men may be better equipped so far as the theories and principles of our science are concerned, the writer doubts if in the practical work of dentistry they have advanced proportionately, or rather advanced at all. Has it not been apparent to us all that the ability to intelligently comprehend a new fact is in direct proportion to our training in the line of that fact? And as that fact has bearing upon other facts with which we are conversant already, even so in the study of dentistry facts which have but a remote bearing upon that science are the more difficult of comprehension to the average student, and serve but to distract his mental energies from the study in which he is engaged. But on the other hand each new fact, the relation of which to dentistry is evident to the student, once acquired is but an additional incentive to further study, and renders the acquisition of higher attainments easier and lighter and adds new impetus to his labors.

The writer desires it to be distinctly understood that he has no wish to either lessen the labors of our dental students or to abolish in any manner the branches which are taught in any of our reputable colleges. But he does desire to bring out two facts of, to him, great importance. He has found from personal experience in teaching that it is necessary for our students to measure up to a higher standard of preliminary educational requirements to comprehend the various laboratory work imposed upon them by the advanced curriculum, and that this advanced curriculum shall be so specialized and crystallized around dentistry that they will see the bearing of each fact when presented in the various laboratories, and grasp its significance and bearing as related to dentistry. This constitutes no curtailment of their studies, but makes those studies dentistry and not general medicine; and it rests with the profession to accomplish this, by the selection of their students of such colleges as have the facilities and show an honest endeavor to keep their promises made in their announcements.

Let the education of a dental student be a flight of stairs composed of dental facts, and let no fact be presented to him in his study which he is unable to comprehend in its relation to dentistry; and weed from his mental garden all facts whose relation to that science cannot be made manifest and apparent to him. It is the young man going out into the field of dentistry to whom the profession looks for the discoveries and advancement of dental science, and can we expect fruit different from the seed planted in his mind? So let us aim to bestow upon him such knowledge as will be a fair consideration for the money he expends and which will produce a lasting honor to our profession.—*Dental Cosmos*, *Oct. 1897*.

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OPERATIVE AND PROSTHETIC POINTERS. It not infrequently happens that the operator accidentally applies carbolic acid to the lips of his patient, and unless he is able to relieve the immediate suffering and the eschar which invariably results, he is likely to bring upon himself the unpleasant phrase of, "He is a careless, hustling dentist." Now if you have had the misfortune of getting the carbolic acid in touch with the lips, you can avoid all difficulties by bathing the burned surface with vinegar and all unpleasant after effects will be avoided.

Resorcin may be employed as a local anesthetic. Resorcin, as we all know, has the properties of an antiseptic, since it is a derivative of carbolic acid and possesses many of the powers of the latter. Its qualities as a local anesthetic, however, are of considerable interest. In cases of stomatitis there is great need for such a remedy, and the mucous membrane can be painted with a mixture of resorcin 5 parts, water 30 parts. On account of its less irritating properties, it is considered one of the best antiseptic agents to be employed in the oral cavity. In diphtheria or other diseases causing a sloughing sore, no better results can be had than applying a mixture of resorcin to the affected portion. It accomplishes all that can be expected of carbolic acid and does it in a painless manner. For dental ulcerations it can be used in the form of a liquid; in case it is to be used as a dressing for wounds it should be used in crystal form.

As a substitute for cocain, Prof. Einhorn and Dr. Heinz, of Munich, have discovered a new chemical combination, having the desired effects of cocain minus the toxic results so frequently met with. They have named their agency "Orthoform," and great properties have been claimed for the new local anesthetic. It is a non-poisonous white powder, and has the power to completely anesthetize all nerve filaments with which it comes in contact. It has been used successfully in lancing boils and also in minor surgical cases. The powder is placed under the skin or membrane, and after the lapse of a few moments complete anesthesia takes place. The doctors intend to give further attention to this drug and expect soon to place it on the market.—Translated by Dr. B. J. Cigrand, from *Zahnartzliches Wochenblatt*, *Aug.-Sept. 1897*.

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GUTTA-PERCHA AS A RETAINER OF CROWNS AND BRIDGES. Every practitioner should be prepared to attain definite and satisfactory results in the setting of post-crowns and bridges. It not infrequently occurs that the operator is obliged to remove a recently positioned crown or bridge; this undesirable operation is usually caused by pericemental troubles or possibly apical disturbances, and all practitioners are familiar with the hard task of eliminating the cement which is generally employed as a retainer. In repairing bridges we are also obliged to remove the entire bridge, and the displeasure to both patient and operator is well known. But if the crown or bridge be retained by gutta-percha the removal need not give us trouble since, if we grasp the crown or pillar of the bridge with a hot forcep, the heat of the latter is readily conveyed to the gutta-percha, which, yielding to the warmth, admits of an easy detachment of the denture. In positioning a crown having gutta-percha as a retainer, it is wise to inquire of the patient whether any pain was felt; if so, the gutta-percha closely filling the root-canal has forced air through the apical foramen and this has induced the pain. Be certain to have but a sparing amount of gutta-percha on the post, and ascertain the exact amount by previous trial and trimming. Not only have we by this method accomplished retention of the bridge, but we have anchored it with a substance which is not acted upon by the dirt or fluids of the mouth.—Translated by Dr. B. J. Cigrand from *Zahnartzliches Wochenblatt, Oct. 1897.*

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FREQUENCY OF DENTAL CARIES IN CHILDREN. Dr. M. Lipschitz, of Berlin, gave a most interesting paper on the above subject before the recent Congress at Moscow. It demonstrates as no paper of the past has, that dental caries is a disease frequently met with in the youthful population of Europe; it establishes the fact that this human ailment is abroad and that the impression that "in Europe the people have little difficulty with dental caries" is wrong. Among other things he says: "The great scope of dental caries is well known to the dental operator, but it is within the last few years that anything has been done to found our knowledge of this matter on statistics. In order to ascertain whether or not the frequency of dental caries is deserving of national attention, it was necessary to demonstrate by means of reliable statistics that the human economy is heir to no greater disease than dental caries. It was suggested and put into effect that a systematic investigation of the condition of the teeth of school-children be inaugurated, the investigation to be conducted in the several large cities of Germany, and if possible to extend to foreign lands.

In 1891, as near as can be determined, the first report relative to dental caries among school children was put into print. In Lucern, Switzerland, 1,000 children, ranging from 7 to 14 years of age, showed 94 per cent suffering from caries. In Germany Herr

Feuchel in 1893 examined 335 pupils with this result: 12 presented perfect dentures; 200 boys 97 per cent decayed teeth, 135 girls 95 per cent. These figures were gotten at the poorhouse at Hamburg, and the results of his investigation led him to probe into the condition of teeth at schools and academies which had pupils from more hygienic quarters. Among 693 children, 98 per cent of the girls presented decayed teeth and 99 per cent of the boys.

Roese, who gave even greater attention to this matter, published the following from the schools of Freiburg: Among 3,460 children, 98.7 per cent suffered from dental caries; and from neighboring towns 747 children showed 98 per cent.

Berten observed among 3,347 gathered from 21 villages that the boys suffered less than the girls, the former 81.3 per cent, the latter 84.6 per cent. He examined 78,348 teeth, and of this number 15.3 per cent were decayed.

In Ungarn Herr Unghvari noted 87.2 per cent of 1,000 children afflicted with dental caries, and in 3,961 teeth 15.4 per cent were decayed.

In England the British Dental Association under the direction of Dr. George Cunningham examined 10,517 mouths, presenting 76.78 per cent to 94.5 per cent. At one time after examining 40,000 teeth 4 were found with fillings; at another time 100,000 presented 237 fillings.

In Sweden under the direction of Foeberg (1897), in 1,617 children 97.2 per cent had decayed teeth. In the Masonic Orphans' Home 117 children showed 93.1 per cent afflicted with dental caries.

My (Lipschitz) own observations among 407 children (girls) of one of the Berlin schools gave the following results: 339 suffered from dental caries. I am of the opinion that great good will come from these investigations, and I would advocate that dental societies throughout the civilized world give this matter consideration and make reports of discoveries.—Trans. by Dr. B. J. Cigrand from *Deutche Monatsschrift fuer Zahnheilkunde, Oct. 1897.*

A NEW PHENOMENON OBSERVED IN FACIAL PERIPHERAL PARALYSIS is reported by Bordier and Frenkel in the *Semaine Medicale* of September 8. The subject affected with severe peripheral facial paralysis is unable to close his eyes when requested, without turning the eyeball of the side involved upward and slightly outward. This sign indicates the gravity of the prognosis, and the progress toward recovery as it gradually disappears.

Letters.

IS IT ETHICAL?

New York, Dec. 17, 1897.

To the Editor of the Dental Digest,

My Dear Sir:—I am constrained to write you on what I think might properly be called a question of ethics.

Recently one of my patients, looking over a copy of the *Items of Interest*, chanced upon the elaborate illustrations of a certain dental office. After reading it she exclaimed, "Is not that rather close to advertising?" I had not thought of it in that light before, but looked upon it as one of the new ideas in "new" dental journalism.

My patient, however, went on to say—what a brother practitioner subsequently put in other words—that some patients, seeing these journals on our tables and reading such articles, would compare surroundings, and that as a result of such comparison they would be led to go to some of those whose offices were thus exploited, on the ground that because of the elaborate outfit they must, of necessity, be the better dentists. My patient seemed to think that many people would be thus influenced, and I have heard more than one brother practitioner express the same thought. I am undecided on that score.

I have rather enjoyed looking over these articles, especially as I am acquainted with some of the gentlemen and know personally how nice their offices are, and the thought that this was advertising had not entered my head. I can readily see how one could boom himself by obtaining a quantity of the journals and sending them to his patients, without having overstepped the letter of the code, and we all know that there are many who would do so.

There is another side to this matter, however, which seems to me to call for attention much more than the possible advertising. There are many good men—fine operators, dentists in every sense of the word, careful and conscientious—who by reason of many things have not such fine offices. Some do not care to, more cannot afford to. The latter class may have large families to support, requiring close attention to business. Only the few can have the millionaire patients and obtain royal fees; the majority must be content with moderate fees, and are not able to put as much into office display.

Is it good taste to publish such articles, which at once bring out in bold relief all the little differences between offices? Does it promote brotherly feeling to cause a sigh of regret, discontent, what you will, on the part of the less fortunate practitioner?

Where shall the line be drawn between thus publicly attracting attention, even though it be in a dental journal, and the "animated" picture of a "dental parlor" in the windows of the large department stores? It strikes me that it's a rather close shave.

Yours, etc., CHEVALIER.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, Dec. 13, 1897.

Philadelphia dentists think a great deal of your monthly visits, both for the wholesome effects of the same, and owing to the high personal regard we have for your editor. Many members of our profession are just beginning to realize how much they owe to Dr. Crouse, and there are several thousand more whom we trust will soon awaken to the duties of the hour.

Many of us here have been interested in the war of words carried on through your pages for a few months past between "Quaker" and a certain young editor. Quaker seemed to have disposed of him quite effectually in his last letter. Now the aforesaid editor we learn is taking his own medicine—the Famous Vegetable Compound —and we are happy to report that he is convalescing.

"New York" in his November communication says: "We suggest that he (the aforesaid editor) study and give the proper range to his editorials." While this may be all right, yet we would respectfully inform "New York" that our man has a good nurse and, it is thought, is now out of danger, so we would direct his attention to the appearance of the same malady in his own city. At least a commission of experts have recently reported that New York was taking care of a similar case, and in a young editor very like our own. The most prominent symptom of this trouble is that the patient is controlled by the idea that on him lies the responsibility of moving the whole world. This is a terrible thought, and from the fact that it necessitates such early rising to get things going, the poor soul is soon weighed down by it. It is assumed that this is purely a mental derangement, as no germs have yet been discovered or isolated which will produce the condition, so the vegetable compound we think as good a treatment as could be followed, and it is perfectly harmless.

We are particularly interested in the matter touched upon by "Quaker Jr." in your last issue. He makes a plea for a higher moral standard in the profession, and thinks this matter should be taken up by the Association of College Faculties. The ideal dental college would be one where not only a thoroughly practical course should be taught, and where all the influences thrown about the students should be for good, and a greater interest shown in the moral development of the coming practitioners, but where students should not be accepted unless they brought with them a letter from some member of the profession in good standing, preferably an alumnus of the college in question, certifying to the *moral character* and personal qualifications of the applicant.

What we are sadly in need of is more good, sound common sense and less law. We are really getting loaded down with *law*. It is law here and law there, and what does it all amount to? We are having immoral and incompetent men graduated as in the earlier days, and even have to submit in certain states to boards of examiners (so called), who look forward to their semi-annual meetings as an opportunity for a good time, some of which are disgraceful affairs, but they are created and supported by law. We should be glad to hear from your editor along these lines.

We hear that the last meeting of the Odontological Society was one of much interest. The subject of the evening, "Dental Caries," was discussed by Drs. C. N. Peirce, Edw. T. Darby, Libby of Pittsburgh, Kratzer of Reading, Jeffries of Wilmington, and others. Prof. Peirce's remarks were illustrated by a lantern exhibit, and Prof. Darby spoke at some length concerning the predisposing systemic causes of this universal disorder which we are all combatting.

We were very glad that you called upon the editor of the *Items of Interest* for information. These are points that he should make clear to us, and in the future he will, we hope, be careful not to leave us in this uncertain position.

That "Fellowship" alloy works beautifully, and we have no doubt will prove all that is claimed for it. We are putting it in alongside of other amalgams and making memoranda of the fact. Time will tell. We have long needed a perfect amalgam and we feel very much encouraged since experimenting with "Fellowship."

One of the finest dental libraries within our knowledge is that possessed by the Academy of Stomatology of this city. The shelves are not only well filled with all of the modern dental literature, but we find copies of many rare and valuable works. It is in charge of a most excellent librarian, Dr. William H. Trueman, and any one wishing to donate any works of interest or value may write to this gentleman.

Prof. James Truman is ill and has just met with a serious loss in the death of his son. Here is one of the great men in the dental world, stricken physically and sorely at heart, and we are all touched by it. Our sincere sympathy goes out to the doctor and she who has been his companion and helpmate for so many years.

Yours cordially and for a successful New Year,

QUAKER 3D.

LETTER FROM CANADA.

To the Editor of the Digest, MONTREAL, Dec. 15, 1897.

DEAR MR. EDITOR:—In our last letter we promised to speak of the course of study preliminary to practice in this province. The course is three full years and it is first necessary to pass the matriculation examination, which consists of the following subjects:

Latin—Cæsar's Commentaries, Book I, with Virgil's Aneid, Book I. Questions of Grammar and Construction. *English*—Writing from Dictation. Grammar and Analysis. A critical knowledge of one of Shakespeare's Plays. Macbeth, 1897. *French*—Translation into English of extracts from Fenelon's "Adventures de Telemaque." Questions of Grammar. *Literature*—Elements of the subject, with the History of English Literature from the reign of Queen Elizabeth to the present time. *History*—Britain, France, Canada. *Geography*—Modern, especially of Britain and France, and of their Colonies and Possessions. *Arithmetic*—To the end of Square Root, and to include a knowledge of the Metrical System. *Algebra*—To Simultaneous Equations of the first degree, inclusive. *Geometry*—Euclid, Books I, II, III, and the first twenty Propositions of Book VI; also the measurement of the Surfaces and Volumes of the regular geometrical figures.

Note.—The above subjects are obligatory. In addition to them, candidates must choose one of the two following: *Philosophy*—Logic, and Intellectual and Moral Philosophy. *Physics*—Elementary Statics and Dynamics of Solids and Fluids, with the Chapter on Heat. *Botany and Primary Chemistry* will be added next year.

The examination fee is $20. Should the candidate pass the examination he must then indenture with a practicing licentiate for three years, after which he registers his indentures with the secretary of the dental board, the fee for said registration being $10. We might also add that the licentiate generally charges the student a fee ranging from $300 up for the privilege of indenturing with him. It is also necessary for the student to attend three six months' terms at the college, the fee for which is $105 a term. Notwithstanding the steady advance in the standard of matriculation, and the large amount (for the average student) required to complete the course, the number of students is increasing every year and the standard of the men entering is very high; a good omen for the future of dentistry in this province.

A proof of their high standard was given at the last primary medical examination, i. e., the first and second years, for they carried off all the prizes it was possible for them to win; this was rather hard on the poor radicals, but goes to prove the benefits of a high standard of matriculation.

In a future letter on our position in the social scale, the benefits of a first-class preliminary education will be further exemplified.

Gold plates seem to be coming more into vogue again; many prefer them to bridges on account of their greater cleanliness.

Dr. J. S. Marshall of your city should feel quite pleased, as a number of the members of the faculty of the dental college have adopted his suggestion in the August DIGEST, and are lecturing, or rather reading from the text-books. It remains to be seen whether this system will prove better than the one in general use, viz, a compilation by the lecturer himself.

We saw an oddity (for Montreal) lately, a man with diamonds inserted in his teeth. It is a pity he went to your city to have the work done, as he could have found men here willing to do such work, and he would probably have saved money, as we believe the duty on diamonds coming into this country is lower than the United States tariff rate, but perhaps he took the diamonds with him. Gold crowns on front teeth, diamonds, what next? Vulgar vanity seems to have a strong hold on a proportion of the citizens of this country, and love of dollars seems to have too strong a hold on a certain number of the members of our profession.

In reading Dr. Mills' obituary of Dr. Evans, we notice he states that at the time of his death he occupied the office of dentist to the royal families of England. We were always under the impression that Sir Edwin Sanders held that position.

Dr. P. Brown has returned from Virginia much improved in health and has resumed his practice.

Dr. Alexander Hyndman, of Sherbrooke, registrar of the dental board, and the most popular member of that body, died last week from pneumonia; he had been ailing for some time.

Fraternally. MONTREAL.

BALTIMORE LETTER.

Dear Digest: BALTIMORE, NOV. 15, 1897.

The echoes of my last gutteral notes had scarcely died away, when I received yours saying you were again going to press. What a ceaseless thing protection machinery is, to be sure; what restless, nimble, watch-dog, high tariff sort of hooks you do send out to exact tribute even of a lazy southerner, who in his most ardent days of courtship could write to his sweetheart only once or twice a year. You western owls, who toot and whoop all night, display a culpable indifference to our seasons of repose. After all, climate is a wonderful thing, and to judge by a recent editorial in the *International*, page 835, sectionalism will never die.

It seems to Oriole particularly unfortunate that an outsider should have been the first to call public attention to the fact that the president of the *late* Southern Dental Association has been guilty of some absurdities in his call for the next meeting at St. Augustine in February. In the first place there is no longer any Southern Dental Association; that name was lost in the amalgamation with the American, and at the last meeting of the Southern it was unanimously resolved that hereafter its name should be "The Southern Branch of the National Dental Association." The retention of the old name in the face of this unanimous action has the appearance, to say the least, of bad faith; but I prefer to consider this, as well as the snobbishness displayed in the call to arms by the president, as the result of his personal bad judgment. I do not believe that the rank and file of the members of this old and honorable association will approve either of misrepresentation or jingoism.

There can be no denial of the fact that as a local society there is a good field of usefulness for this organization; but that the men of this section should be content to flock together in a sectional and selfish manner, consenting at the same time that the national association, with which they have no affiliation, has supreme authority in matters professional, is incompatible with my ideas of the progressive and ambitious character of the men foremost in this organization. Not only this, but it is entirely out of sympathy with the generous plan of organization of the national association that this large section should be ignored or ostracised, even by its own action or preference. The bare existence of such an intention or desire on the part of the southern men would have been fatal to the attempt to organize a national association. The hope and intention so unanimously expressed at Old Point was, that every section and every association should unite in this one central organization, the professional authority for the whole country; not that they should in a distant and vague way confer upon this organization all authority, but that they should heartily unite to develop in this country a central organization, whose cordial support from all sections would give it the authority essential to usefulness in such a body.

I believe this to have been the intention and that this will be the ultimate result, in spite of croakers and pessimists. It cannot be supposed that this ''consummation devoutly to be wished'' will take place immediately, at the snap of the fingers of a ''Heller,'' but that under the guidance and suggestion of its officers it will—not without difficulties and misunderstandings—ultimately develop. Once firmly organized and in good working order, this organization can bring order out of the chaos which exists in many quarters of our professional household. So join the push and help her along: ''Play my way or not at all'' won't do for men, and ''surely we are all (honorable) men.''

The young graduate of the Ohio Dental College and the possessor of several certificates from western states has met his Waterloo. The Maryland State Board of Dental Examiners have examined him and he flunked. Now there must be something rotten in your western educational and examining methods, or surely a man couldn't get a diploma from the second oldest dental college, and the right to practice after successful examinations from several states, and finally fail before the examiners in modest little Maryland. The fact that the young man had accepted employment from a ''Cheap John'' could not possibly have prejudiced his case, for a careful wording of our law makes no possible allowance for such action; class legislation is no more popular here than with you. The new law should be more explicit. Any man who advertises platina fillings at 75 cents should have his license rescinded *by law*. Then, too, the National Association of Dental Examiners should not place on the list of reputables any college which does not confer its diploma conditionally: viz., if the graduate backslides in his morals or ethics the diploma reverts to the college.

Statements have come from New York that more legislation has been had there than in any other state, and still quackery is rampant, worse than ever, in fact. Now surely the New-Yorkers don't want to admit that the law is an impotent instrument to down quackery. Let them borrow our examining board, or maybe they could get the Virginia board; with either I'll warrant that Colonel Waring wouldn't be a marker.

We see that the Northern Illinois Society is petitioning for uniformity in the dental laws. The "National" appointed a committee to encourage this and the sentiment is already popular in some quarters, but not in Maryland or Virginia.

Our plucked candidate here proposes to air his diploma and certificates in court; we'll let you know how he works out. We must confess to a loss of interest in the young man; it is such a vulgar thing, even though one is starving, to consent to be unethical for a little money. Pity our profession can't organize a Y. M. C. A. for these stragglers; some of them might be reclaimed. Either this or build a picket fence all around our town so they can't get in.

The Washington City and Virginia and Maryland state societies will hold a union meeting in Baltimore early in June. Come down and partake of our hospitality. You'll find the Maryland men (examiners included) royal good fellows and glad to see you and other western brethren. Cordially, ORIOLE.

LETTER FROM THE NORTHWEST.

DULUTH, MINN., Dec. 18, 1897.

To the Editor of the Dental Digest,

MY DEAR MR. EDITOR:—My first thought in answer to your request for a letter is a wish for editor and readers, in harmony with all that is happy and joyous, full of the message of the season—"Peace on earth, good will to men;" and following closely, as echo follows sound, with just a shade of mockery, comes the second thought, what of this good will among the members of the dental profession, and is there any peace on earth for him who toils upward fast bound to the ball and chain of bread-winning serfdom, perhaps lashed at every step by the cat of his merciless task-master, ambition? Yet I remember with encouragement that the dentists of America have learned that they can successfully cooperate against their old-time enemy and oppressor, the patent-rights fiend corporation. Why not join hands against old Father Time and his steadily moving scythe? By small annual payments or assessments for death of members, or even for each member passing beyond the age limit, or being permanently disabled, something could be provided not only for widows and orphans, as by other similar organizations (surely this would be quite as complimentary as reports of committees "in memoriam"), but also for those whom death has not claimed, but who often need protection even more as they struggle on to the far end of the journey, with eyes growing dim and hands less true and steady; their voices losing fast the power and magnetism with which to hold an audience; unable to keep the pace set by younger men, and passed by and forsaken by an ever-fickle public. Aye, and often forsaken by the institutions that have fattened upon the fruit of their life's researches and attainments, gathered and freely given in the very fullness of ripening maturity. Brother Crouse, the eyes of the dental world are upon you. Will you undertake another task and show how much more men can accomplish with minds assured for their own future and the welfare of those they love?

The coming meeting of the National School of Dental Technics seems to be the most prominent feature of general interest at the moment, and Stepfather Cattell is sounding the tocsin for a great gathering of the clans. In this connection it is with pardonable pride that the Northwest calls attention to the fact that advance sheets recently distributed promise some very good things from Weeks, the center rush of Minnesota.

Dr. Davenport, of Moorhead, leaves the Minnesota State Board of Dental Examiners this year, after long and able service. He will be missed.

They do say that Dr. C. M. Bailey, of Minneapolis, is guilelessly innocent of the fact that a year hence he will be expected to use his long experience in college work to help him as a member of the examining board.

It is some little time since anyone has published as his own one of Dr. St. John's ideas. You might not expect such modesty in

Minneapolis, but the fact remains that this Minneapolitan has many times shown new methods that others have claimed later.

There is an ominous silence from the southern part of the state that can mean nothing but a coup of some sort. Those Southern Minnesota Dental Society fellows are never quiet and, like the Indian, are most active when least in evidence. Merrill, Robinson, Cruttenden, Stearns, and all your associate good workers, vertebra of Minnesota's organizations, we wonder what you are brewing now?

The Odontological Society of Milwaukee, of limited membership, after the manner of its Chicago parent, was organized a year ago and is reported to be right in line and doing good work. A happy state of prosperity and good fellowship among its members was fully in evidence at a recent dinner at the Plankinton. Dr. Peck, of Chicago, is to read a paper at their next meeting. The Odontologicals will be heard from; count on it.

Milwaukee has another, the Milwaukee Dental Society, newly organized and more general in its membership. Success to them all.

The Milwaukee School of Dentistry, which has recently been admitted to the Faculties' Association, has an attendance this season of ninety, with a graduating class of about twenty.

It may not be generally known that Dr. Enos, a practitioner here a number of years ago, was a nephew of the late Dr. Evans.

Dr. McCausey, of Janesville, is in line for double congratulation, having recently married and taken the chair of Dental Pathology in the Dental Department of the Milwaukee Medical College. His friends are all pleased at the opportunity.

Dr. Chittenden, of Madison, is supposed to be busy making ready for the next meeting of the Wisconsin State Dental Society, to be held in that city.

It was recently my privilege, as a member of a committee appointed by the Section of Stomatology of the American Medical Association, to examine some forty or more patients in the office of Dr. W. G. A. Bonwill in Philadelphia, many of whose mouths had been in his charge for twenty odd years, some few longer than thirty, and it is of interest to note, in view of current discussion of stress and flow, of shrinking amalgam fillings, of proposed square-shaped, straight-sided cavities, and other radical changes, that all this vast quantity of work seemed to be without exception in perfect condition, although, beyond occasional examination, the patients assured me, but little had been done since the fillings were inserted. Contours, plus-contours, interproximate spaces were alike preserved, and curious as it may seem, gold and amalgam stood side by side, the one doing service quite as perfectly as the other. It gives me pleasure to pay tribute to the genius that has wrought this living record of thirty-five years of usefulness, and the lesson as I read it bids us not to lose sight, in the theoretical study of methods and principles, of that practical *something* which made this possible.

In conclusion, Mr. Editor, I am embarrassed. The November DIGEST is before me, full of interesting matter most entertainingly discussed by "Cincinnati," "Cleveland," "Quaker, Jr.," "Montreal," "New York," and the familiar notes of "Oriole." Shall I follow these into the popular highway of nom-de-plume and sign myself "Old Man Afraid of His Horses," or adopt some other title equally familiar to Northwestern Territory?

It is apparent that the freedom with which your writers express themselves, and the diversity of interests they represent, are undoubtedly powerful levers in the profession to-day. Yet, having in mind the confusion arising from evergreen discussions between friend "Quaker" and his well-known adversary, I wonder whether after all the use of proper names would really tend to restrain a proper freedom of expression; and so pleading guilty to old-fashioned ideas, for the present I remain, without the plural pronoun of royalty and editorial custom, without even my "alter ego," just the same old shade of BROWN, GEO. V. I.

NEW YORK LETTER.

To the Editor of the Digest, NEW YORK, Dec. 21, 1897.

MR. EDITOR:—We think we do not err in noticing from time to time the various articles published in the journals. Some are commendatory and others are not.

We see in the November *Review* that Dr. Geo. T. Carpenter fails to notice that others have experimented and written in the direction he has. Drs. Atkinson and Rynear both worked along the same line and with similar results.

Dr. Perry has an emphatic article for more artistic work with artificial teeth. We commend his earnestness, for he at least seems to believe what he writes. There is much truth in what he says about turning over all plate work to laboratory men.

One writer is very honest. In closing an excellent article on tooth-bleaching, he says there are many more things he would like to explain, but the truth is, he does not understand them himself. Pity more are not so frank. As Dr. Cattell says in his article on the "Etiology of Decay," we know a few things and are ignorant of many more.

Great curiosity is aroused to learn who is "the one dentist who represents the highest type of the professional man" in New York. Why not publish his photograph? We think some of the criticisms in the *Items of Interest* of Dr. Jack's writings are weak, yes even silly, such as saying that it should be considered malpractice to do anything to any tooth without first adjusting the rubber-dam; and that oxychlorid of zinc always is a menace to the life of the pulp.

The editorial in the above journal on "Quacks" shows great ability. We await the formation of a state association which shall formulate an article to be published in all the newspapers of the country for the education of the public. The identity of those back of this is to be kept profoundly secret. The danger would be that in some way or other these men would be found out. One of the gentry described in the editorial achieved a little cheap notoriety recently by striking a millionaire over the head with a champagne bottle.

Dr. M. L. Thompson, a prominent dentist of Brooklyn, died yesterday from heart disease. He was born in Pittsfield, Mass., and had lived in Brooklyn nearly forty years. When we came to Brooklyn in 1861 we had Dr. Thompson as an assistant for four years. He was of a rather inventive turn of mind, and brought out some profitable inventions.

The death is announced at Hamilton, Bermuda, of Dr. Wm. C. Horne. A native of the West Indies, he came early to New York, where he achieved prominence in the dental profession, being one of the founders of the Odontological Society. He afterwards practiced several years in Paris and in Rome. Later in life he built up a practice in various islands of the West Indies and in the South American states. From 1862 Dr. Horne was an active participant in all our society movements. He made more than ordinary repute for himself and the society of which he was recording secretary—the Brooklyn Dental Association, which from 1862 to 1870 took an active part in dental doings.

The following is from November number of the *Pacific Stomatological Gazette:* "Dr. Thomas Evans has a unique method of retarding the setting of cements while mixing. He takes an ordinary bottle filled with ice water, places a small quantity of cement and liquid on the bottle and stirs it, and the cold retards it; then when placed in a warm cavity it sets rapidly. He uses cement entirely in the anterior teeth. He fills the teeth and instructs the patient to return in six months. He does not consider that he is doing permanent work in the filling line, but argues that he saves the teeth, and must see the patient in six months." We would add that not infrequently the use of gutta-percha at the cervical edge will prevent the recurrence of decay from the cement dissolving away.

A wonder is going the rounds of the city press, in connection with the discoveries of prehistoric people in the mounds of Mexico, which is, that pearls are found in the teeth. Dentists could explain that they are merely pulp stones.

This reminds us; who originated the term "pulp," which is very suggestive? If we are not mistaken, it is due to Dr. A. L. Northrop, of this city. It used to be "nerve." We can now see that nerve meant only a portion of what was contained in the bony chamber of the tooth.

We wish to correct an error in our last letter. We did not mean to imply that the operation in question was the first time Dr. Atkinson used a mallet, but that it was the first time we had seen it used.

The last *Dominion Dental Journal* contained a very simple but serviceable hint—wet a slack engine cord to tighten it. We have practiced this hundreds of times, yet we did not think to tell of it. It is the little things that help, so speak them out. A simple but very useful procedure is this—put a mandrel in the handpiece, set the engine in motion and let the mandrel wind on a piece of cotton from the fingers, which forms a cotton cone. Then with the aid of polishing powders we can cleanse the crowns and necks of teeth and get into the pockets and loosened gum tissue, smoothing the rough surfaces of the exposed roots and doing it in a merciful way. The size of the cone will suggest itself to the operator.

The several expressions of opinion in the International afford an abundance of reading and much opportunity for thought, and reading should come before thought. We were a little puzzled as to what those criticizing were aiming at, but while reading Dr. Max-field's article the line of reasoning began to dawn upon us. We assume that Drs. Black and Williams are right in their views concerning the physical characteristics of teeth. This subject can be viewed only from the standpoint of nutrition. The system may become weakened by overwork, and the enfeebled organs fail to do the work necessary for furnishing nutrition. We see the same defect occurring in the organic structure of the teeth as we do in any other part of the body. Malnutrition does occur in the organic structure of the tooth just as in the soft tissues. Finally, no one has ever been able to give an analysis of the basal subject known to be in all organized tissue. Peter Cooper made millions out of his glue, but he never knew of what it was composed. We can know only phases of truth; truth itself is undefinable.

In our next letter we shall give the readers of the DIGEST a synopsis of Dr. Nash's book. We would say in advance that it is worthy of careful attention. The book shows great industry in minute detail, and deals with the hackneyed subject of pyorrhea alveolaris very intelligently.

The First District Dental Society at its December meeting listened to an admirable paper, "Immediate and Remote Cause of the Malformation of the Dental Arch," by Prof. Dwight L. Hubbard. On the program was this statement—"The A. L. Northrop Dental Library is now open to the profession."

The officers of the Odontological Society for 1898 are: S. G. Perry, Pres.; J. B. Littig, Vice-Pres.; Eugene Palmer, Rec. Sec'y; Dr. Walker, Treasurer; Dr. Parker, Editor.

The Stomatologicals will have their annual banquet Jan. 14, at Delmonico's. Drs. Peirce, Jack and Truman, from Philadelphia, and Seth Low, president of Columbia College, will be present.

Cordially, NEW YORK.

TO STUDY THE DENTAL SCHOOLS OF THE UNITED STATES.—Dr. P. Gires has been officially commissioned by the French government (July 31) to visit this country and study the workings of our dental colleges.—*Gaz. Med. de Paris, Aug. 21.*

COUNTING BLOOD CORPUSCLES.—An instrument for counting blood corpuscles has been invented by Dr. Judson Deland, of Philadelphia. A finely graduated tube containing a quantity of blood is revolved at a speed of one thousand revolutions a minute. By force of gravity the corpuscles divide and form on the side of the tube in easily traceable divisions of red corpuscles, white corpuscles and serum.

The Dental Digest.
PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

A HAPPY NEW YEAR.

How can we get the greatest amount of pleasure from life the coming year? By doing some good in the world. The profession of dentistry is an almost unlimited field, and there is such a multitude of ways in which one practitioner can help and do a good turn to his neighbor, that there can be no excuse for anyone failing in this regard. Any little service done to your fellow practitioners will promote good feeling and increase your own happiness. Surely more friendly intercourse is as much needed as anything in our profession.

Busy yourself in some useful way. If nothing else occurs to you, the pages of the DIGEST are always open, and we shall be glad to receive anything which you think would be of interest to the profession. A little time given in this way will surely add to your own happiness and be warmly appreciated by those who read the result of your labor and thoughtfulness.

NATIONAL SCHOOL OF DENTAL TECHNICS.

This association is now meeting in Chicago, and we shall give a full report of its proceedings in the next issue of the DIGEST. The members of this organization are striving for a higher standard and more uniform and systematic work in many directions, and they deserve to have their efforts crowned with success.

The evening of December 29 Dr. Black read a very exhaustive paper on Instrument Nomenclature and Measurement. His plan is to do away with the great variety of forms of instruments now in use and adopt a uniform system of names and shapes. While no great change can probably be made with the present generation of dentists, the students now entering the profession will be able to adopt his methods. In this connection we would add, that we hope one result of his labors will be to train the students in a more general use of instruments. Excavators are used too little in the colleges, most of the work being done with a bur in the engine.

CLOSE OF OUR THIRD VOLUME.

This issue completes the third volume of the DIGEST. During the last year this journal has grown in many ways. It has sixteen more reading and sixteen more advertising pages, and the number of its subscribers has been increased one-third. Very few have ordered the journal discontinued for 1898, so we feel assured that the profession are pleased with the DIGEST and that it fills its place. We have received much help and many letters of encouragement during the past year from the profession, and we solicit a continuance of the same.

Our aim throughout has been, and still will be, to make this journal a little different from any other journal; to make it interesting and spicy; to keep it abreast of the times; and above all, to give it an individuality. The DIGEST is under no obligation to any unlawful trust or combination, and is not controlled by any dental supply house. For this reason we can truthfully say, that it is the only independent dental journal published in which any subject of interest to the profession can be discussed without fear or favor. Perhaps this is one reason why it has more paid subscribers than any other dental journal published.

Thanking one and all for their assistance during the hard times of the past year, and hoping that, with a brighter prospect before us all, others will give us their aid, we close our third volume with best wishes for the new year.

THIS MONTH'S ARTICLES.

The device described by Dr. Heckard is very simple but effective. It would increase the interest in our dental literature if more would send these helpful little items.

The article on "Dental Colleges" by Dr. Allwine expresses the idea which is entertained by the thinking part of our profession to-day—that the students should be better educated before entering college. The fault does not lie so much with the teachers and their methods, but in the material upon which they have to work.

Cataphoresis is admirably dealt with by Dr. Holbrook. This subject has been reviewed so many times that it is a pleasure to find an article which is not merely a rehash of what others have written. The Doctor gives several new and valuable points which are worthy of consideration.

Dr. Talbot emphasizes the importance of prophylaxis of the mouth in its bearing upon the general health, and recommends various forms of treatment.

We would call special attention to the article on "Soft Foil," by Dr. Chittenden, as it treats of a plan of filling which in many respects has no equal. He describes its use in ribbon form, but cylinders of the proper length, wedged into the cavity, save an immense amount of time and packing and make a very safe and durable filling. To start with non-cohesive and finish with cohesive foil often makes a better filling than one made with cohesive foil alone. Non-cohesive gold foil has become an almost unknown article in dental operations, and it is a deplorable fact, not only because the profession are deprived of a useful adjunct, but also because the use of instruments with hand pressure gives the operator more manipulative ability than do the engine and mallet.

The letters as usual contain much interesting news. A perusal of the letter from Canada leads us to believe that the examination for admission into the Canadian colleges is more severe than our own here in the states. The letter by "Chevalier," who is one of the best known and most respected dentists in this country, will probably arouse much discussion, and that is undoubtedly his purpose in writing. The gentlemen who send these monthly letters take time from a busy life to do so, and we are pleased to note that the profession appreciate their self-sacrifice, as evinced by many complimentary letters concerning this department which we have received.

Notices.

RESOLUTIONS PASSED BY CHICAGO DENTAL SOCIETY, OCT. 5, 1897.

Again we are called upon to record the name of a distinguished American dentist among those whose life work is finished, and whose achievements form a conspicuous part of the history of dentistry the last quarter of a century.

The life of Dr. Frank Abbott was one of great worth to dentistry in America. During a period of about thirty years he was at the head of the New York College of Dentistry, and with this institution, one of the foremost in our country, his name will ever be inseparable. Dr. Abbott was honored by election to the presidency of the American Dental Association, the Association of Dental College Faculties and other bodies with which he was connected, and was recognized as a leading man in the profession.

Resolved, That in the death of Dr. Frank Abbott the dental profession has lost a member whose affability won him our friendship, and whose earnest efforts in advancing dentistry among practitioners and as an educator placed him among the foremost men in the profession.

Resolved, The Chicago Dental Society deeply regret the untimely death of Dr. Abbott and convey herewith our sympathy to his family in their bereavement.

Resolved, That a copy of these resolutions be spread upon our records and a copy be sent to the dental journals and to his family.

TRUMAN W. BROPHY,
J. H. WOOLLEY, } Committee.
C. S. CASE,

Whereas, the change so rapidly taking place among the pioneers of our profession has been conspicuously marked in the death of Dr. L. G. Ingersoll, of Keokuk, Iowa.

Dr. Ingersoll was a leader in the profession and contributed largely to its literature. His standing as a man of broad education gave him a prominent place among educators and literary people, and commanded the attention of all audiences which he addressed. Dr. Ingersoll was not only a scholar, but he was an earnest worker and an eloquent speaker.

Resolved, That in the death of Dr. Ingersoll the profession has lost another distinguished member, whose life work was in the interest of a higher educational standard.

Resolved, That a copy of these resolutions be placed on the records of this society and published in the dental journals, and that a copy be forwarded to his family.

TRUMAN W. BROPHY,
J. H. WOOLLEY, } Committee.
C. S. CASE,

LATEST DENTAL PATENTS.

593,777. Fumigator, Thomas H. McDonald, Potomac, Mont.
594,302. Inhaler, George B. Underwood, New York, N. Y.
594,543. Adjustable head rest, Charles A. Lee, Canastota, N. Y.
594,486. Dental appliance, Joseph E. Nichols, Rochester, N. H.
594,572. Arm rest, William M. Slavik, St. Louis, Mo.
594,952. Dental tool guard, Frank F. Hoyer, Owosac, Mich.
595,068. Dental appliance, William T. Lyon, Portland, Ore.
594,961. Depurator, Thomas N. McLean, Elizabeth, N. J., and C. B. McLean, Stamford, Conn.
595,532. Dental cuspidor, Dennis S. Doyle, assignor to W. W. Doyle, Philadelphia, Pa.
595,533. Dental cuspidor, Dennis S. Doyle, assignor to W. W. Doyle, Philadelphia, Pa.
595,301. Dental apparatus, Charles D. Grundy, Batley, England.

(List furnished by John A. Saul, Patent Attorney, Washington, D. C.)

RESOLUTIONS OF RESPECT.

Whereas, in the sudden death of Dr. E. V. McLeod, which occurred November 24 the Massachusetts Board of Registration in Dentistry has lost one of its original members, who during its existence of eleven years has served as secretary,

Resolved, That in the death of Dr. McLeod the board has sustained the loss of one who has been most efficient and faithful to its duties, giving an immense amount of time to its work.

Resolved, That as an examiner he displayed wisdom and discretion and wonderful tact in dealing with men.

Resolved, That in his contact with his associates on the board, his kindliness of nature and generosity of heart will always be remembered with the warmest affection.

Resolved, That we extend our sincere and heartfelt sympathy to his bereaved widow in this her great affliction.

Resolved, That these resolutions be entered on the records, and a copy be sent the widow of the deceased and to the several dental journals for publication. (Signed) JOHN F. DOWSLEY,
GEO. E. MITCHELL,
THOS. J. BARRETT,
DWIGHT M. CLAPP.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(*Continued from page 759.*)

MONDAY, AUGUST 2, 1897—AFTERNOON SESSION.

The President called the meeting to order and the secretary called the roll.

Dr. Klump: I offer the following resolution:

Whereas, matters of importance both to the National Association of Dental Faculties and the National Association of Dental Examiners are liable to occur at the sessions and in the interim of the meetings; therefore, be it

Resolved, That the President annually appoint a committee of five and that we request the National Association of Dental Faculties to appoint a similar committee, these to act as a committee of conference for these associations to adjust all questions of difference that may arise or to prepare any business in which both associations are interested.

The above resolution was seconded.

Dr. Barlow: Is that a permanent committee?

Dr. Klump: A standing committee.

Dr. Barlow: I cannot see any reason for the formation of those committees. If they are formed the members will reside in all parts of the country and in all probability they can only have a session annually; if any occasion for such committees should arise they could be appointed at the time and for the time being.

The President: I am satisfied that some of the Association of Faculties and the President are in favor of a committee of that kind, so that, ad interim, matters might be presented to that committee for consultation at least—or to the chairman of the committee—and they might gain some information on the subject.

Dr. Klump: It seems to me that we have seen the importance of such a committee even at this meeting. Sometimes there are questions to adjust on short notice, and if there was a standing committee of this kind they could consider the matter for a long time before they got together even if they had no meeting. If there were any vacancies in the committee when the sessions occurred they could be filled by appointment by the president, the same as any other committees. I do not see any harm that could come of it and I think there could be a good deal of good arise.

Dr. Dowsley: I am heartily in favor of the resolution, but I am afraid that a committee of five would be too large. I think a committee of three would be easier handled and more likely to get together.

Dr. Klump: I had some consultation with some of the members of the National Association of Faculties, and they thought it was a good idea and they were going to introduce a similar resolution there. If the committee is too large I have no objection to making a committee of three. The committee should be the same, however, as that of the Association of Faculties. I am willing to accept the amendment making the committee three, although I think it should be the same number as the Faculties' Association appoint.

Dr. Fredericks: I rise for information. Have we not a standing committee whose business it is to take care of these matters—the committee on colleges? Has not that committee certain rights and privileges; have they not the right to decide upon these matters and take these matters under advisement? If that be the case, I see no necessity for loading up our association with a lot of standing committees. Even if this committee were appointed the members would be from different states and it would be practically impossible for them to meet between the sessions. I cannot see any good which will come from having such a committee.

Dr. Donnally: In the Association of Faculties there is what they call an ad-interim committee and all questions that arise during the year are submitted to that committee of three and its decisions are binding until the next meeting of the association. A similar committee of this body, acting with that committee, to make and explain rules and so on and to confer with that committee and agree upon a condition that would obtain until the next session of this board, would save trouble and would act along the same line as the Faculties' Association in obtaining objects that are common to both organizations.

Dr. Klump: I suggest we make it a committee without naming the number, leaving that to the president—if the maker of the amendment will accept that.

The President: I understand that is accepted by the maker of the amendment. That resolution, Dr. Donnally, covers about the ideas which you have?

Dr. Donnally: Excepting that they have an ad-interim committee, and instead of requesting them to appoint a new committee I think we should ask them to authorize their ad-interim committee to confer and agree with this committee on any difficulty that might arise between the two organizations; that agreement to obtain until the next meeting of the two organizations when we would take it up, and we would take it up independently of the action of the committee except in so far as the time that has passed is concerned.

The President: The only difficulty is they have their committee already appointed.

Dr. Donnally: And we simply request them to authorize their committee to confer with ours.

The President: There would be no objection, I take it, to inserting that in the resolution.

Dr. Klump: There will be a similar resolution offered over there.

The President: I so understand it. Do you consider this resolution sufficient for our action?

Dr. Hatfield: Would it not be the part of wisdom to defer this until we have a report from the conference committee that is out?

The President: This committee does not supersede any action they may take.

Dr. Hatfield: I thought it might be to attend to the business which is at present unfinished.

Dr. Libby: The objections made by our friend from New Orleans I do not think enter into this case at all. The conference committees that have been appointed from year to year by this association have been working outside of the committee on colleges and I consider it a very necessary thing that this be one of our standing committees. The men then can be in consultation—they will know the work they have to do and will be better prepared to do the work than if they took it up at a time when some conference became necessary during the meetings of the association.

Dr. Moore: May I ask that the secretary read the resolutions instituting the committee on colleges and their duties?

Dr. Meeker: The only thing I can find is this, which appears in the proceedings at Saratoga last year: "In conclusion, your committee on colleges, in looking up the official records to ascertain exactly what their powers and duties were, found that no specifications whatever had been made and they would therefore suggest that the duties and powers of said committee be distinctly formulated." I have not the original resolution which instituted the committee on colleges, which was adopted at Saratoga I think the year after this association was formed. After Dr Levy's death the books were lost together with nearly all the papers. Maybe Dr. Brown can tell us something about that.

Dr. Brown: Has there not been a committee appointed to codify the rules, constitution, by-laws, regulations and so forth? Until that committee can report and get things in intelligent shape I think it would only complicate matters to pass a resolution of this kind at the present time and I therefore move to lay this resolution on the table.

The motion to lay upon the table was seconded and carried by the following rising vote: 14 ayes, 13 nays.

The President: The conference committee I understand is ready to report.

Dr. Donnally: I would like to ask, for information, before I read the report, who constitute the committee on codification of rules, etc.?

The President: Drs. Meeker, Adams and Brown.

Dr. Donnally, chairman of the committee on conference, then presented a report which, after some discussion, was referred back to the committee for further consideration.

Dr. Wright: I have a matter here which seems to me to come within the province of this association I do not know how many will agree with it, but I hope you will at least be entertained, if not amused by it. (Reading):

"For the evolution of or to develop dental science this, the nation's dental association, is hereby organized, and is composed of active and ex-presidents of all regular chartered state dental associations and societies, dental college faculties both active and retired, also active and retired state dental examining boards.

"Officers—A president, elected by this body; vice-presidents, one from each state or foreign nation, viz., the retiring president of each chartered state dental association, their rank to be determined by lot at each succeeding meeting of this body after this meeting, when the lot shall determine between those present. Each state to pay $10 per annum and receive equal share of literature, which literature shall be the aggregation of state proceedings or foreign nations which have been approved or at least not con demned by the critics. The recording secretary shall receive $300 for each meeting, this amount to include a stenographer; corresponding secretary, $25 for each meeting; president, for each meeting $30. Biennial meetings to be held at Washington City."

That is in the rough, to be worked out when the president has been elected.

On motion the above communication was referred to a committee of three with instructions to report at the next meeting of this association. The Chair appointed as such committee Drs. Wright, Green and Hatfield.

Dr. McCurdy: I am somewhat nonplussed about this paper; I cannot understand the gentleman and should like to ask him a question, but if I do I don't want the gentleman to be offended.

Dr. Wright: I will not be offended; I am used to it.

Dr. McCurdy: I would like to ask the gentleman if he means this as a burlesque or does he mean to get up another organization?

Dr. Wright: Thank you, sir; I appreciate it from more positions than one. I was perhaps too unguarded to defend that point and I thank the gentleman for approaching where the hornet sat down. It is not a burlesque; it is a thought thrown out for consideration. If you think of it, what is it? You stimulate state dental associations to better actions and more careful work. Their literature is poured into this body to be revised and edited—not only states but the world. That is one object. But it is too crude; it came to me in a moment; thinks I "It is good, I will give it to them." And as to burlesqueing, I do not presume to burlesque anything except perhaps myself. But the idea to me is a serious one. "Active and ex-members of state dental examining boards"—how many? Think! "Active and ex-members of state dental faculties"—how many? Think! "Active and ex-presidents of chartered dental associations"—how many? Think! And of all of the earth besides. Would you burlesque it? Not I. I am afraid of them. I am a little bit cowardly anyhow and I like the idea of being afraid if I can put that fear in the right place, for then it makes me toe the mark. It is brand new to you gentlemen and it is almost brand new to me and I just ask that you think of it. Some one suggested that this be referred to a committee of three. I ask for a committee of the whole, to report next year. You will have time to think of it; it will perhaps take larger proportions in your mind and be worked out in better shape than with me. The thought came to me; I think it belongs to you. I give it to you!

Dr. McCurdy: I am very much obliged to the gentleman for his explanation. When he said that while he did not expect the members to agree with him, still it might amuse them, I could not just understand his meaning,

Dr. Barrett: While we are waiting for the report of the committee on conference I should like to say that I would like to see the association of examiners wake up and do something to raise the standard of dentistry, and pass at least one resolution to that effect so that I can go home to my native board and report it. I have not been able to recognize a single thing which we have done since the beginning of this meeting that has had a tendency to even hold the standard of dentistry where it is. Not only that, but everything has been done with a tendency to lower the standard; it has been a pulling down ever since I have been here. I came here with the idea that this organization was formed for the purpose of building dentistry up, not pulling it down. If I can take one report of an uplifting back to my state association I shall be very glad indeed.

Dr. Moore: I am very glad indeed to see a gentleman who is here, I think, for the first time take that view of the case There are some of us who have been attending this national association for years and who have been working just on that line. But it seems to have been the policy here this year to pull down and break down, despite the protest of those who have had experience, everything that has been done and to put us back where we were some seven or eight years ago. What we have done has been accomplished year after year—a little at a time, for it had to be done a little at a time; and perhaps what was done last year was a little too drastic, and because there were criticisms upon it and because some of the faculties stirred up trouble about it, it seems that those who came here this year were utterly demoralized and felt that we must take a back track and give away everything, and I am very glad that one of the gentlemen who is here for the first time wants something to be done in the opposite direction. But what can we do now in the face of what we have done?

Dr. Meeker. Article II of our constitution says, "The objects of this association shall be to secure, through the operation of the various state examining boards, a high and uniform standard qualification for dental practitioners and, as far as practicable, uniformity of methods in the working of those boards and of legislation in creating them." It seemed singular to me as I sat here this afternoon, after being here so many years, to see the association retrograding. What were we formed for? A series of examining boards throughout this country to raise the standard of the dental practitioner, the standard of examining boards and the standard of qualifications. I do not want to say a word against any of these gentlemen who are working hard on this conference committee—they are my friends; but it seems to me we are retrograding. We are the ones to do the upholding; we have nothing particular to do with the college faculties. We make our standard of qualifications and each board here, in the exercise of the police powers bestowed upon its board by the laws of the state, recognize certain colleges which come up to a certain standard. In that we have nothing whatever to do with the faculties' board that I can see. It makes no difference to New Jersey, because we have our standard by law; no man can be examined unless he is a graduate of a reputable dental college that is recognized on the list of this board. We have this national association as a standard, and if this association says in its printed list that such and such a college has a high standard of preliminary examination we accept that college diploma and examine the applicant. If there is to be a lowering of the standard and the preliminary examination is lowered I tell you plainly, and I think my state will back me up, New Jersey will not recognize the college that lowers its standard, even if it is on the list of this association; although we are with the association, our effort is to have it higher. The very article that I read, by Dr. Ottolingui, seems to me to contain this matter in a nutshell. Through sympathy with colleges which are struggling to secure a financial position in the world we lower the bars somewhat to enable them to get along. I do not think that is right; by so doing a lot of incompetent men come in and graduate. They are lowering the standard of ourselves, of our state and of our association

Dr. Johnson: It seems to me that everything we have done since we have come here has been to retract. This conference committee may have done what they deemed best—they may have acted, as they thought, advisedly; but, sir, I cannot but differ with them. The dignity of this association ought to be upheld. If we are just going to pass a resolution and send it over to the Association of Faculties and say, "Will you comply with this?" and get a negative answer, and then say, "Well, if you won't comply with it we will qualify it until you will," where are we? I tell you, sir, I do not believe that is the way to raise the dignity of dentistry or the dignity of this association. Just a little independence goes a long way at times, and I know the colleges throughout the country do value the recognition of this association very highly. I know from experience how hard some of these colleges have fought to gain this recognition; they do value it very highly, and when it comes down to the point they are going to comply with your regulations before they will be stricken off the list. I tell you it means students to them; it is an advertisement for them; it raises them, as well as it does ourselves, to maintain the standard. I am not satisfied to go back to Georgia and report to my board that we have come here and taken down the bars, and now every student who can write his name, or that can't write his name even, can matriculate and enter the profession. It is my experience, sir, that when a student enters a college and gets a diploma, it matters not whether he gets recognition from the state board he is going to practice somewhere and somehow. The remedy is to raise the standard of the preliminary examination. That is the only way on earth by which the profession of dentistry can be raised. Dr. Brown offered a good resolution this morning and I hope that before this association adjourns that resolution at least will be passed.

Dr. Faught: I dislike exceedingly to speak on this subject, but I do want to make matters very clear and plain so far as my information goes and I do desire that this association shall act intelligently. Your committee on colleges has very carefully canvassed this matter with the colleges now on the recognized list. We have drawn our information from men who stand high in connection with the Faculties' Association and we learn that any attempt to fix a standard here will probably be met by seventeen colleges that will not uphold anything above the standard of 1884. There are about thirty-five colleges on our recognized list at the present time; take away seventeen from that and it gives us eighteen. If this standard which was read this morning and asked to be made your standard shall be adopted we could admit more colleges from that list; they stand ready to agree to it; then we would have at least twenty-five colleges who would undoubtedly agree to that in spite of anything the Faculties' Association might do. They would agree to it personally for the sake of appearing upon the list, and we would have a list then that would represent a majority of the colleges of this country, and if we do not do that we simply do what the Faculties' Association—or I should say the few, and the very few men who have raised this turmoil—would have us do, and that is for this association to give up their work and take simply the laws of the Faculties' Association and wreck our organization entirely. [Applause.]

(To be continued.)

News Summary.

To Sharpen Hypodermic Points.—First pass the cleaning wire through so that it protrudes at both ends of the needle. Take a corundum wheel, and with the engine grind off the point of needle with the wire at same time. The wire can then be pushed through from the other extremity, carrying all the debris with it. Thus the needle will be perfectly clear.—*Dr. F. B. Spooner.*

Sanitary Methods for Barbers.—The police of Paris now compel barbers and hairdressers to take sanitary measures in carrying on their business. All metallic instruments, razors, combs, shears, cutting-machines, etc., must be kept in a solution of soap and boiling water for ten minutes before being used. Only nickel-plated combs are allowed. Pulverizers must be substituted for powder puffs. Cut hair must be covered with sawdust and emoved at once. The hands must be washed before waiting on a customer.

Illegal Practice of Dentistry.—A man who was recently convicted of practicing dentistry without previous registration, as required by the law of this state, was fined $150 in special sessions. The three justices agreed in regarding the accused's action as a clear violation of the law, and said that they believed the dental law to be for the general good of the public, and expressed their pleasure in the opportunity afforded them of upholding the law. The man's employer was sharply rebuked for consenting to his violation of the dental act, and, perhaps as a mark of contrition or in reparation of his wrong, he paid the prisoner's fine.—*New York Medical Record, Oct. 23.*

Tears Are Good for Woman, says Dr. Campbell, in *The Hospital.* The beneficial effect of a good cry to a woman, he asserts, is partly due to the increased depth of respiration and the improvement in the often languid circulation thereby induced, but to a large extent it is the result of the muscular exercise involved, by which the general vascular tension, and especially the blood pressure in the brain, is much reduced. The profuse flow of tears no doubt also acts strongly on the cerebral circulation in still further reducing tension. The sobbing movements, again, have a good influence upon the venous circulation in the abdominal and pelvic viscera, while the exhaustion produced tends to cause sleep and thus to give the nervous system its best chance of recuperation.

ADVANCE OF DENTISTRY.—One whose knowledge of dentistry was obtained only a few years ago, but who has not kept thoroughly in touch with the rapid advances in this branch of medical science, would be astonished on opening this work to see what has been accomplished in the past decade; almost a new science has been created. Dentistry is sometimes regarded as a special branch of surgery, but in reality it is a profession in itself, divided into almost as many specialties as is the profession of medicine.—*Book Review in Medical Record.*

NASAL MICROORGANISMS.—(1) In all bacterioscopic investigations of the nasal fossæ, in all researches as to the action of nasal mucus, etc., a clear distinction must be made between the vestibule of the nose and the proper mucous cavity. The former is lined with skin, and is not part of the nose cavity proper, but only leads to it. (2) Contamination with the lining of the vestibule is difficult to avoid, even when this source of error has been realized. (3) In the dusts and crusts of mucus and debris deposited among the vibrissæ of healthy subjects microorganisms are never absent, and are usually abundant. (4) On the Schneiderian membrane the reverse is the case. Under normal conditions microorganisms are never plentiful here, are rarely even numerous, and in more than eighty per cent of cases no organisms whatever are found and the mucus is completely sterile. (5) The occurrence of pathogenic organisms must be so infrequent that their presence on the Schneiderian membrane can be regarded only as quite exceptional.—*Thompson and Hewlett, Arch. of Otol., xxiv., 3 and 4.*

GLOWWORM'S LIGHT.—The glowworm's light is said to have been shown to be due to the emission of rays similar to the Roentgen rays. Three hundred glowworms were caught near Kioto and placed before photographic plates screened from the light by several thicknesses of black paper, together with plates of brass, copper and aluminum. A piece of cardboard with a hole in it was placed between the metal and the photographic plate, and for two days the arrangement was kept in a dark chamber sheltered from all foreign lights. On developing the plate, however, it was found to be blackened, except the part opposite the hole in the cardboard. The rays of the glowworm would therefore appear to penetrate metal and excite luminosity in cardboard. When there is nothing between the sensitive plate and the glowworm the rays are said to behave like ordinary light, but in traversing some metals and cardboard they seem to acquire properties like those of the X-rays, or it may be that the glowworm emits X as well as ordinary rays. This account savors somewhat of the improbable, and in regard to the latter part of it, there may be a third explanation.—*Pharmaceutical Journal.*

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